Hand-Delivered

July 30, 2004

Mr. James Ponton
Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612

RE: Draft Corrective Action Plan for Commissary PX Study Area
Presidio of San Francisco

Dear Mr. Ponton:

The Presidio Trust is pleased to provide the Regional Water Quality Control Board (RWQCB) with the enclosed *Draft Corrective Action Plan, Commissary P/X Study Area,Presidio of San Francisco* dated July 2004 and prepared by Treadwell & Rollo for the Presidio Trust. This document was prepared to meet the requirements of Task 6 of RWQCB Order for the Presidio of San Francisco (Order No. R2-2003-0080)

In June 2004, the Trust requested a 30-day time extension (from June 30 to July 30, 2004) to the Presidio Petroleum Time Schedule for the submission date of the subject document. This document is being submitted on the July 30, 2004 due date.

We look forward to receiving RWQCB comments on the subject draft document and preparing a final corrective action plan in this matter. If you have any questions, please contact me (415-561-4259) or Jennifer Yata (415-561-4272) of my staff.

Yours very truly,

THE PRESIDIO TRUST

for

Craig Cooper
Remediation Program Manager

Enclosure

cc: Robert Boggs, DTSC
Brian Ullensvang, NPS
Doug Kern, Mark Youngkin, RAB
Bruce Handel, US Army COE

DRAFT
CORRECTIVE ACTION PLAN
COMMISSARY/PX STUDY AREA

PRESIDIO OF SAN FRANCISCO, CALIFORNIA

Prepared For:

The Presidio Trust
34 Graham Street, P.O. Box 29052
San Francisco, California 94129-0052
415/561-5300 fax 415/561-5315

July 2004

DRAFT
CORRECTIVE ACTION PLAN
COMMISSARY/PX STUDY AREA

PRESIDIO OF SAN FRANCISCO, CALIFORNIA

Prepared For:

The Presidio Trust
34 Graham Street, P.O. Box 29052
San Francisco, California 94129-0052
415/561-5300 fax 415/561-5315

Prepared By:

Treadwell & Rollo, Inc.
555 Montgomery Street, Suite 1300
San Francisco, California 94111
415/955-9040 fax 415/955-9041

July 2004

Dorinda Shipman, R.G., C.HG., Treadwell & Rollo, Inc.

REGISTERED GEOLOGIST
DORINDA SHIPMAN
CH No. 215
CERTIFIED HYDROGEOLOGIST
STATE OF CALIFORNIA

30 July 2004
Date

DRAFT
CORRECTIVE ACTION PLAN
COMMISSARY/PX STUDY AREA
PRESIDIO OF SAN FRANCISCO, CALIFORNIA

TABLE OF CONTENTS

TABLE OF CONTENTS
(continued)

LIST OF TABLES

LIST OF TABLES
(continued)

LIST OF FIGURES

LIST OF APPENDICES

List of Acronyms and Abbreviations

AHPA	Archeological and Historic Preservation Act
Army	U. S. Army
As	arsenic
AST	Above ground storage tank
BAAQMD	Bay Area Air Quality Management District
B(a)A	benzo(a)anthracene
B(a)P	benzo(a)pyrene
B(b)F	benzo(b)fluoranthene
B(g,h,i)	benzo(g, h,i)perylene
B(k)F	benzo(k)fluoranthene
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, xylenes
CAP	Corrective Action Plan
CCR	California Code of Regulations
Cd	cadmium
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulation
Cleanup Levels Document	*Development of Presidio-Wide Cleanup Levels for Soil, Sediment, Groundwater, and Surface Water*
COC	contaminants of concern
Cr	chromium
Cu	copper
CZMA	Coastal Zone Management Act
D(a,h)A	dibenz(a,h)anthracene
1,2-DCE	1,2-dichloroethylene
DPT	Direct-push technology
DTSC	California Department of Toxic Substances Control
EKI	Erler & Kalinowski, Inc.
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Acts

List of Acronyms and Abbreviations (continued)

FDS	Fuel Distribution System
GCL	Geosynthetic Clay Liner
GG	groundwater grab
GMPA	General Management Plan Amendment
GW	groundwater monitoring well
HSC	Health & Safety Code
I(1,2,3-c,d)P	Indeno(1,2,3-c,d)pyrene
IT	IT Corporation
LTTD	Low Temperature Thermal Desorption
LUCs	Land use controls
LUCMRR	Land Use Control Master Reference Report
MCLs	maximum contaminant levels
mg/kg	milligrams per kilogram
Main Installation FS	*Presidio Trust Revised Feasibility Study Main Installation Sites*
MBTA	Migratory Bird Treaty Act
MOA	Memorandum of Agreement
Motor Pool	Presidio Consolidated Motor Pool
MTBE	methyl tert-butyl ether
NAGPRA	Native American Graves Protection and Repatriation Act
NBAR	non-binding allocation of responsibility
NHPA	National Historic Preservation Act
Ni	nickel
NPS	National Park Service
O&M	Operation and Maintenance
ORC®	Oxygen Release Compound
Order	RWQCB Order No. R2-2003-0080
PAHs	Polycyclic aromatic hydrocarbons
Parsons	Parsons Brinckerhoff
PCBs	Polychlorinated biphenols
Pb	lead
PCOCs	potential contaminants of concern
PLLW	Presidio Lower Low Water Datum of 1907
Presidio	Presidio of San Francisco
PRGs	preliminary remediation goals

List of Acronyms and Abbreviations
(continued)

PTMP	Presidio Trust Management Plan
PX	Post Exchange
QAPP	Quality Assurance Project Plan
RAB	Restoration Advisory Board
RAOs	Remedial Action Objectives
RAP	Remedial Action Plan
RCRA	Resource Conservation and Recovery Act
RUs	remedial units
RWQCB	California Regional Water Quality Control Board
SB	Soil Boring
SCRs	Site Cleanup Requirements
sf	square feet
SI	Site Investigation
SI Report	*Draft Site Investigation Report for the Commissary/Post Exchange Study Area*
Study Area	Commissary PX Study Area (Former Motor Pool Area) as defined on Figure 1
SVE	soil vapor extraction
TBC	to be considered
Tetra Tech	Tetra Tech EM Inc.
Title 27	Title 27 of the California Code of Regulations
TMV	toxicity, mobility, and volume
TPH	Total petroleum hydrocarbons
TPHg	Total petroleum hydrocarbons as gasoline
TPHd	Total petroleum hydrocarbons as diesel fuel
TPHfo	Total petroleum hydrocarbons as fuel oil
TPHmo	Total petroleum hydrocarbons as motor oil
trans-1,3-DCP	Trans-1,3-dichloropropene
Treadwell & Rollo	Treadwell & Rollo, Inc.
Trust	Presidio Trust
Trust Act	Section 103 of Omnibus Parks and Public Lands Management Act of 1996, Public Law 104-333, 110 State 4097
TSCA	Toxic Substances Control Act
TSDFs	treatment, storage, and disposal facilities
UST	Underground storage tank

List of Acronyms and Abbreviations
(continued)

$\mu g/L$	micrograms per liter
VOCs	Volatile organic compounds
Work Plan	*Site Investigation Work Plan Commissary/Post Exchange Study Area*
yd^3	cubic yards
Zn	zinc

1.0 INTRODUCTION

On behalf of the Presidio Trust (Trust), Treadwell & Rollo, Inc. (Treadwell & Rollo) has prepared this *Draft Corrective Action Plan (CAP) for the Commissary/Post Exchange Study Area* encompassing the vicinity of the current Commissary and Main Post Exchange (Commissary/PX) also known as the Former Motor Pool (Study Area) at the Presidio of San Francisco (Presidio), California (Figure 1). A Site Investigation (SI) has been conducted to characterize the nature and extent of potential soil and groundwater contamination at the Study Area. The SI was performed in accordance with the approved *Site Investigation Work Plan for the Commissary/Post Exchange Study Area, Presidio of San Francisco, California* (Work Plan) (Treadwell & Rollo, 2002b). Results of the SI were presented in the *Draft Site Investigation Report for the Commissary/Post Exchange Study Area* (SI Report) (Treadwell & Rollo 2003c). As documented in the SI Report, this area historically, contained a number of structures that constituted the Presidio Consolidated Motor Pool (Motor Pool). The Trust investigated the Study Area in accordance with the California Regional Water Quality Control Board (RWQCB) orders and by the California Department of Toxic Substances Control (DTSC) requirements to assess the impact of the storage, use, and release of petroleum and possible hazardous substances related to the former Motor Pool.

Using the information obtained during the SI, this Draft CAP has been prepared to evaluate potential remedial alternatives to address adverse effects of the release of petroleum-related contamination and to select corrective action for implementation at the Commissary/PX Study Area. The corrective action selected under this CAP will adequately protect human health, safety and the environment and will protect current and potential beneficial uses of water. As described in Section 1.2 of this Draft CAP, certain releases of hazardous substances within the Study Area are discrete sites that are being addressed by the Trust under different environmental cleanup authority in an appropriate future regulatory decision document.

1.1 Background

The Presidio is located at the northern tip of the San Francisco peninsula (Figure 1). The Presidio occupies approximately 1,491 acres and is bounded by San Francisco Bay on the north and the Pacific Ocean on the west. Densely populated residential areas of San Francisco border the Presidio to the south and east.

The Presidio was a U.S. Army (Army) installation from 1848 through 1994, serving as a mobilization and embarkation point during several overseas conflicts, a medical debarkation center, and a coastal defense for the San Francisco Bay area. Industrial operations formerly performed at the Presidio are associated with maintenance and repair of vehicles, aircraft, and base facilities. The Presidio also contains a number of landfills used by the Army for the disposal of municipal waste and construction debris.

In December 1988, the Secretary of Defense's Commission on Base Realignments and Closures recommended closure of the Presidio. Under Public Law 92-589, the Presidio was transferred to the National Park Service (NPS) on 1 October 1994 and became part of the Golden Gate National Recreational Area. As required by the Base Realignment and Closure Act, the Army initiated environmental studies in conjunction with the transfer of the property.

Section 103 of the Omnibus Parks and Public Lands Management Act of 1996, Public Law l04-333, 110 State 4097 (Trust Act) created the Trust. The Trust is a federal government corporation established for the purpose of managing the leasing, maintenance, rehabilitation, and improvement of the non-coastal portions of the Presidio (Area B). The Trust manages Area B in accordance with the Trust Act, including the general objectives of the General Management Plan Amendment (GMPA) (NPS, 1994), section 1 of the Golden Gate National Recreation Area Act (Public law 92-589, 86 Stat. 1299, 16 USC 460bb), and the Presidio Trust Management Plan (PTMP) (Trust, 2002). The NPS retained responsibility for Area A of the Presidio and manages Area A in accordance with the GMPA (Figure 1). The Trust assumed responsibility for remediation of both Areas A and B of the Presidio on 24 May 1999 by signing the Presidio Memorandum of Agreement (MOA) and the Area A MOA. In addition, the Trust also entered into a Consent Agreement with DTSC and NPS on 30 August 1999 (DTSC, Trust, and NPS, 1999).

1.2 Commissary/PX Background

The Commissary/PX Study Area is situated between Mason Street and Doyle Drive (U.S. Highway 101) at the northern end of the Presidio (Figure 1 and Figure 2). Prior to the development of the Commissary and PX, the Study Area housed a number of Army structures, which no longer exist, as part of the Motor Pool. Potential contamination sources ("sites") in the Motor Pool are shown on Figure 3 and include the following:

- Former Motor Pool Shops,
- Former Fuel Dispensing and Storage Area,
- Former Grease Racks, Wash Racks, Waste Oil Tanks, Oil/Water Separators,
- Former Fuel Distribution Pipelines,
- Former Storm Drains,
- Former Railroad Tracks and Coal Storage Bin, and
- Former Building 633 Pistol Range and Low Temperature Thermal Desorption (LTTD) Area.

These sites were used at various times to store supplies, equipment, and fuels to service and maintain vehicles for the Presidio. Reviews of historical records, aerial photographs, interviews, and site reconnaissance have identified approximately 30 structures that were present in the Study Area. Additionally, numerous underground storage tanks (USTs) and above ground

storage tanks (ASTs), fuel dispensers, and associated conveyance pipelines were reported active at various times between 1900 and 1984 (IT Corporation [IT], 1998). The Motor Pool was demolished in 1984. Site histories are summarized in the SI Report (Treadwell & Rollo, 2003c).

Four Commissary/PX Study Area sites were determined to be associated with releases of hazardous substances as defined under the Comprehensive Environmental Response, Compensation, and Liability Act, as amended (CERCLA). These four CERCLA sites are the Former Railroad Tracks site and Coal Storage Bin site, the Former Building 633 Pistol Range, and former Building T609. The evaluation and selection of remedial alternatives for these four CERCLA sites will be documented in the future *Remedial Action Plan (RAP), Baker Beach Disturbed Areas 1, 1A, 2, and 2A and Twenty-Seven Other Main Installation Sites* (MACTEC, 2004) and their remediation will be addressed independently and separately from the actions authorized by this CAP.

1.3 Regulatory Framework

As detailed in the RWQCB Order No. R2-2003-0080 (Order), the Commissary/PX is a known petroleum site requiring preparation and implementation of a CAP. The RWQCB Order presents Site Cleanup Requirements (SCRs) for the protection of human health, ecological receptors, and water quality which have been used to develop the CAP cleanup levels.

This Draft CAP has been prepared in accordance with Task 6 of the RWQCB Order. The Draft CAP also fulfills the California requirements of Title 23, California Code of Regulations (CCR), Division 3, Chapter 16, Article 11; and California Health and Safety Code, Chapter 6.8. Cleanup levels for the Commissary/PX Study Area are specified in this Draft CAP. Petroleum contaminant cleanup levels are based on the SCRs listed in the RWQCB Order. Cleanup levels for non-petroleum contaminants are based on the planned land use and site lithology(ies) and are developed in accordance with the *Development of Presidio-Wide Cleanup Levels for Soil, Sediment, Groundwater, and Surface Water* (Erler & Kalinowski, Inc. [EKI], 2002) (Cleanup Levels Document). Applicable state and federal laws are identified and presented in Section 5.3.

1.4 Public Participation

This Draft CAP will be subject to public review and comment including the following:

- Consultation and coordination of corrective action alternatives and selection decisions with the Presidio Restoration Advisory Board (RAB), NPS, and regulatory agencies.
- Preparation of response to comments received on the CAP. The response to comments for this CAP will be completed following receipt of stakeholder comments and will be included as Appendix A in the Final CAP.

2.0 SITE BACKGROUND

This section discusses the geology and hydrogeology, summarizes site history, previous investigations, and corrective actions completed at the Commissary/PX Study Area, and describes the source, nature and extent of contamination found in the SI as well as more recent groundwater sampling results.

2.1 Site Geology and Hydrogeology

The following sections discuss the geologic and hydrogeologic results collected during the SI.

2.1.1 Geology

SI soil boring locations are shown on Figure 4. The materials encountered during the SI included silty sandy gravelly fill material overlaying sand, peat, and highly plastic silt and clay (Bay Mud). The general geologic conditions are illustrated on Figure 5. The sand underlying the fill material is fine to medium grained and typical of the sand which was hydraulically placed from offshore sources to fill the former tidal marsh area (referred to as the 1915 sand). The 1915 sand is laterally continuous over Crissy Field and locally ranges between 3 to 6 feet thick. Native peat and Bay Mud underlie the 1915 sand. Towards the southern Study Area boundary, the 1915 sand overlays naturally occurring interbedded fine-grained estuarine and sand deposits (Figure 5). The Bay Mud does not appear to be continuous across the Study Area. Although the Bay Mud is observed fairly consistently along the northern portion of the Study Area east to west along Mason Street it is not found in the southern portion. In the southern portion of the Study Area, the Bay Mud may pinch out towards the bedrock bluffs and becomes discontinuous with localized areas of peat. Detailed geologic cross sections are presented in the SI Report (Treadwell & Rollo, 2003c).

2.1.2 Hydrogeology

As part of the *Basewide Groundwater Monitoring Plan* for the Presidio, Montgomery Watson (1996b) identified four distinct water-bearing zones (A1, A2, B, and C) beneath the Commissary/PX Study Area. Groundwater was encountered in the A1 zone during the SI at depths ranging between 2 and 5 feet bgs with the depth to groundwater increasing to the south. The A1 zone represents the first groundwater bearing zone encountered beneath the Study Area. Based on the nature of the potential contaminants (petroleum hydrocarbons and related constituent that are lighter than water) and the results of the SI (denser chlorinated volatile organic compounds were not present), the A1 zone is the water-bearing zone of interest for this CAP. Groundwater monitoring wells installed within the Study Area during the SI are screened in the shallow A1 zone. Groundwater elevations collected during the First and Second Quarter 2003 sampling events were evaluated with Study Area wells including Building 610 wells and

former Building 637 wells to understand better A1 zone groundwater flow directions and gradients (Figures 6 and 7). Groundwater elevations for Study Area wells and Building 610 wells are shown in Table 1. Groundwater elevation measurements were collected at all site wells on 10 March and 2 June 2003, at low tide. Low tide was predicted to be at 10:53 AM on 10 March 2003 and at 7:45 AM on 2 June 2003 (Treadwell & Rollo, 2003d). During the First Quarter 2003, groundwater elevations at low tide at the Commissary/PX Area ranged from 7.35 to 14.34 feet above Presidio Lower Low Water Datum of 1907 (PLLW) in groundwater monitoring wells 600GW102 and 600GW105, respectively. Groundwater flowed generally north towards the Crissy Field Marsh and San Francisco Bay (Figure 6). Groundwater gradients at low tide in the Commissary/PX Area were calculated to be approximately 0.012 feet per foot on the western half of the area and 0.008 feet per foot on the eastern half of the area.

During the Second Quarter 2003, groundwater elevations at low tide at the Commissary/PX Area ranged from 5.89 to 12.28 feet above PLLW in monitoring wells 600GW102 and 600GW107, respectively. Groundwater generally flowed in a northerly direction during the Second Quarter 2003 (Figure 7). Groundwater gradients at low tide in the Commissary/PX Area were calculated to be approximately 0.01 feet per foot on the western half of the area and 0.004 feet per foot on the eastern half of the area during the Second Quarter 2003 (Treadwell & Rollo, 2003d).

2.2 Site History

This section presents background information on the potential sources of contaminant releases at the Commissary/PX Study Area, including operational histories and SI potential contaminants of concern (PCOCs). A summary of each Motor Pool source group (Figure 3), including activities and potential contaminant source areas are presented below.

- Former Motor Pool Shop Structures were used primarily for the maintenance and repair of motor vehicles. The activities generally associated with these buildings included the use of fuels, cleaning solvents, and paints. The PCOCs for this group included total petroleum hydrocarbons (TPH) as gasoline (TPHg), total petroleum hydrocarbons as diesel fuel (TPHd), total petroleum hydrocarbons as fuel oil (TPHfo), volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), and 6 metals (cadmium [Cd], chromium [Cr], copper [Cu], lead [Pb], nickel [Ni], and zinc [Zn]).

- Former Fuel (gasoline and diesel) Dispensing and Storage Areas. These include USTs, ASTs, and conveyance pipelines. Several historical structures in the Study Area were used to dispense or store fuels (gasoline, diesel fuel, and fuel oil). This source group includes known or suspected USTs, ASTs, and conveyance pipelines. The PCOCs for this group included TPHg, TPHd, TPHfo, benzene, toluene, ethylbenzene, xylenes (BTEX), MTBE (methyl tert-butyl ether), PAHs, and 6 metals (Cd, Cr, Cu, Pb, Ni, and Zn).

- Former Grease Racks, Wash Racks, Waste Oil Tanks, and Oil/Water Separators include structures or processes that involved the degreasing and cleaning of vehicles, and the collection and storage of oily wastes and solvents. The activities generally associated with these buildings included the use of fuels, and cleaning solvent and waste oil storage. The PCOCs for this group included TPHg, TPHd, TPHfo, VOCs, PAHs, polychlorinated biphenols (PCBs), and 6 metals (Cd, Cr, Cu, Pb, Ni, and Zn).

- Former Fuel Distribution Pipelines included underground distribution pipelines which may have transported gasoline, diesel fuel, and Presidio fuel oil. Several pipelines have been removed during past remedial activities in the Study Area. This source group included a suspected former Fuel Distribution System (FDS) pipeline along the southern boundary of the Study Area (Pipeline A), the FDS pipeline to UST FDS-1, suspected gasoline and diesel fuel pipeline from Building 637 to Building 626 (Pipeline C), and FDS Sections BRG-5, CF-3, CF-4 and CF-12. The PCOCs for this group included TPHg, TPHd, TPHfo, BTEX, MTBE, PAHs, and Pb.

- Former Storm Drain System provided the primary catchment basins and surface runoff collection for the Motor Pool. This source group consists of the former storm drain system for the Motor Pool. Most of the surface runoff within the Motor Pool would have been directed to the former storm drain system. Additionally, it is likely that floor sumps and oil/water separators would have been plumbed to discharge to the storm drain system. This system would collect and convey oily wastes and solvents. The PCOCs for this grouping included TPHg, TPHd, TPHfo, VOCs, PAHs, and 6 metals (Cd, Cr, Cu, Pb, Ni, and Zn).

- Former Railroad and Spur tracks were used to deliver and transport petroleum products and coal to the Motor Pool and the Coal Storage Bin area. This source group consists of the former railroad tracks and Coal Storage Bin located along the south side of Mason Street and a former spur track which entered the former Motor Pool area near Halleck Street and ended adjacent to Building 610. Historical records document coal storage from at least late 1915 through 1942 in the vicinity structure 604. Historically, some of the fuel and coal deliveries to the Motor Pool were made via railcar (IT, 1998). The PCOCs for this group included TPHg, TPHd, TPHfo, VOCs, BTEX, PAHs, 6 metals (Cd, Cr, Cu, Pb, Ni, and Zn), and arsenic (As). Arsenic is a PCOC due to possible coal transport and storage. As described in Section 1.2, the evaluation and selection of remedial alternatives for these CERCLA sites will be documented in a future RAP (MACTEC, 2004) and their remediation will be addressed independently and separately from the actions authorized by this CAP.

- Former LTTD Area where baseline soil sampling detected petroleum hydrocarbons and metals. The former LTTD Area is near the former Building 633 Pistol Range and includes AST 634. No history of Motor Pool use of the area has been identified. However, soil sampling results from the LTTD treatment area that were collected prior to the area being used for soil treatment by the Army included detections of TPH (diesel

fuel and motor oil carbon ranges) and metals (IT, 1998). The PCOCs for this group included TPHg, TPHd, TPHfo, BTEX, PAHs, 6 metals (Cd, Cr, Cu, Pb, Ni, and Zn).

2.3 Past Corrective Actions

A number of investigations and soil removal actions have been conducted in and around the Study Area as summarized in the *Site Investigation Work Plan for the Commissary/Post Exchange Study Area* (Treadwell & Rollo, 2002b), in Table 2, and on Figure 3. The previous removal actions have included:

- Building 626 waste oil UST removal,
- Building 603 UST removal,
- FDS-1 UST (Building 617) removal,
- FDS pipeline to FDS-1 removal (BR6-5),
- Contingency Site 171199-1100 and the Commissary Seeps Interim Source Removal Action,
- FDS pipelines CF-3, CF-4, and CF-12, and
- Contingency Site 111098-1100.

The results of each previous removal action are incorporated into this CAP as described below.

In 1985, a waste oil UST was discovered and removed during the demolition of Building 626 prior to the construction of the Commissary (Building 610) (IT Corporation, 1997a) (Figure 3). Despite a thorough search, little information documenting the size of the UST, location and extent of the soil excavation and volume of soil removed has been found. The total volume of soil removed is unknown. The 10 confirmation soil samples collected, (exact location unknown) report "total fuel hydrocarbons" ranging between 96 milligrams per kilogram (mg/kg) and 5,900 mg/kg (Youngkin, 1996). One soil sample analyzed for VOCs reported non-detect concentrations for all tested analytes. This site was included in the Commissary/PX SI and is being addressed by and incorporated into this CAP.

In 1996, two fuel storage USTs were removed and over-excavated within the Study Area. A 1,000-gallon diesel UST, located adjacent to Building 603 was removed on 15 July 1996. The excavation limits measured approximately 25 feet long by 21 feet wide and 5.5 feet deep (Figure 3). Approximately 98 cubic yards (yd^3) of soil was excavated and removed. A total of 5 confirmation soil samples and 1 groundwater grab sample were collected from the excavation. Concentrations of TPHd (up to 600 mg/kg) and total petroleum hydrocarbons as motor oil (TPHmo) (up to 96 mg/kg) were detected in soil from the limits of the excavation. TPHd (6,800 µg/L) and TPHmo (220 µg/L) concentrations in groundwater were reported from the groundwater grab sample (Montgomery Watson, 1998). These sites were included in the Commissary/PX SI and are being addressed by and incorporated into this CAP.

The second UST, a 1,000-gallon fuel oil UST (FDS-1) was removed on 29 October 1996, with a final excavation measuring 21 feet long by 19 feet wide and 5.5 feet deep (Figure 3). A total of 70 yd^3 of soil was excavated and removed. A total of 6 soil confirmation samples and 1 groundwater grab sample were collected from the excavation. The maximum concentrations for TPHd of 1,900 mg/kg and TPHmo at 1,900 mg/kg were reported in soil from the excavation limits, and the groundwater grab sample results detected TPHd (99 µg/L) and TPHmo (1,100 µg/L) (Montgomery Watson, 1998). These sites were included in the Commissary/PX SI and are being addressed by and incorporated into this CAP.

As part of the Army base-closure environmental activities, many of the Presidio's FDS pipelines were systematically removed. In April 1997, one section of FDS pipeline in the vicinity of the former UST FDS-1 (BR6-5), was removed and the area over-excavated (Figure 3). Approximately 674 yd^3 of soil was removed during the over-excavation activities. A total of 28 confirmation soil samples was collected from the limits of the excavation and analyzed for TPH and PAHs. Detected concentrations up to >1,925 mg/kg for TPH and 3.245 mg/kg for total carcinogenic PAHs were reported from the excavation limits (IT Corporation, 1999). This area was also included in the Commissary/PX SI and is being addressed by and incorporated into this CAP.

Contingency Site 171199-1100 was identified on 17 November 1999 when petroleum odors were observed at water seeps entering the southwestern corner of the Crissy Field wetlands (Trust, 1999b). No sheen was observed on the water surface of the seeps or wetlands. No stained or discolored soil was present. The Trust sampled the seeps in accordance with the Contingency Action Plan (Trust, 1999a). Analyses of grab surface water samples from two surface water seeps to the Crissy Field tidal marsh contained low concentrations of TPHg and TPHd. A potential historical Motor Pool source was identified as the former Buildings 621 through 624 fueling area and Building 655 area. The Interim Source Removal Action Plan was implemented during summer of 2001 north of the Commissary (Building 610) (Figure 3) (Treadwell & Rollo, 2002a). Approximately 2,900 yd^3 of soil was excavated and removed. All soil confirmation sample results at the excavation limits indicated concentrations below the proposed cleanup levels. Groundwater monitoring has been performed since removal action completion as part of Presidio-wide Quarterly Groundwater Monitoring Program (Treadwell & Rollo, 2003d). SI and quarterly groundwater and seep sample TPH results have been below cleanup levels (Treadwell & Rollo, 2003c), and therefore this site requires no further action for TPH. This area was also included in the Commissary/PX SI and is being addressed by and incorporated into this CAP.

In the northwestern portion of the Study Area on the north side of Mason Street, three sections of FDS pipeline (CF-3, CF-4, and CF-12) were removed and over excavated in 1999 (Figure 3). Confirmation samples for FDS lines CF-3, CF-4, and CF-12 indicated cleanup level exceedances within and near the Study Area. The CF-3 exceedance areas were included in the Building 637 corrective action (EKI, 2004). The CF-4 and CF-12 areas are being addressed by and incorporated into this CAP.

Contingency Site 111098-1100 consisted of fuel impacted soil and was discovered in 1998 (Golden Gate National Park Association [GGNPA], 1998) during communication line excavation work. The western portion of this site was excavated as part of the Commissary Seeps Interim Source Removal Action. SI and Trust groundwater grab samples collected south and north of the site were non-detect for TPH (Treadwell & Rollo, 2002a and 2003c), and therefore the western portion of this site requires no further action. The eastern portion of this site has not yet been addressed and has been incorporated into a remedial unit being addressed by this CAP.

2.4 Nature and Extent of Contamination

This section presents a summary of SI and quarterly groundwater sampling results. Figures B-1 through B-7 (Appendix B) illustrate sample locations where no concentrations were detected, where detected concentrations were below SI screening levels, and where SI soil screening levels were exceeded. Tables C-1 through C-10 (Appendix C) present the compounds detected in soil and groundwater.

2.4.1 Nature and Extent of Contamination in Soil

The SI results indicated that TPH (primarily TPHfo) and PAHs (primarily benzo(a)pyrene [B(a)P]), and six metals (Cd, Cr, Cu, Pb, Ni, and Zn) were present at concentrations of concern in the Study Area. The remainder of PCOCs including VOCs, PCBs, and arsenic were either not detected above laboratory reporting limits and/or detected above soil SI screening levels. A comparison of these soil data against applicable cleanup levels and the selection of soil contaminants of concern (COCs) is provided in Section 3.3. SI soil results are summarized below.

2.4.1.1 TPH

TPH results are summarized in Figures B-1 and B-2 and Table C-1.

- TPHg was detected in 11 of 212 samples at concentrations ranging between 1 mg/kg and 2,600 mg/kg.

- TPHd was detected in 48 of 315 samples at concentrations ranging between 1.9 mg/kg and 1,500 mg/kg.

- TPHfo was detected in 191 of 296 samples at concentrations ranging between 10 mg/kg and 12,000 mg/kg.

Overall shallow soil impacts were widely spread in the central portion of the Study Area, but are limited west of Building 610 and further east at former railroad soil boring 600RRSB03 (Figure B-1). The deep soil exceedances occurred directly below or adjacent to the shallow soil exceedances, but have a smaller lateral extent (Figure B-2). Detected concentrations decreased with depth.

2.4.1.2 VOCs, BTEX, and MTBE

Detections of VOCs, BTEX, and MTBE are summarized in Table C-1 and C-2. With the exception of the following compounds, VOCs were not detected above laboratory reporting limits.

- Carbon disulfide was detected in 610SB01[5.0] and in duplicate sample DUP080502D (parent sample 600SB103[4]) at concentrations of 0.005 mg/kg and 0.007 mg/kg, respectively.
- Acetone was detected at two locations 619SB03[4.5] and 628SB06[4]. Detections ranged from 0.14 mg/kg to 0.28 mg/kg.
- Trans-1,3-dichloropropene (trans-1,3-DCP) was detected at 0.015 mg/kg in sample 628SB06[2].
- 2-Butanone was detected in soil samples 610SB02[7.5] and 626SB04[11.0] at 0.017 mg/kg and 0.021mg/kg, respectively.
- 1,2-dichloroethylene (1,2-DCE) was detected in soil sample 610SB04[7.5] at a concentration of 0.13 mg/kg.

With the exception of a single detection of MTBE (0.008 mg/kg in 628SB09[5]), BTEX and MTBE were not detected above the laboratory reporting limits in any of the soil samples.

2.4.1.3 PAHs

PAH detections are summarized on Figures B-3 and B-4 and Table C-3. Of the 354 SI soil samples analyzed for PAHs, 204 samples had PAHs detected. PAH compounds with soil cleanup levels ranging between 0.027 to 0.27 mg/kg, were found at the following concentrations:

- Benzo(a)anthracene [B(a)A] was detected in 164 of 354 samples analyzed at concentrations ranging between 0.0041 and 3.4 mg/kg.
- B(a)P was detected in 194 out of 354 samples analyzed at concentrations ranging between 0.004 and 2.9 mg/kg.
- Benzo(b)fluoranthene [B(b)F] was detected in 166 out of 354 samples analyzed at concentrations ranging between 0.0037 to 3.4 mg/kg.
- Benzo(k)fluoranthene [B(k)F] was detected in 139 of 354 samples analyzed at concentrations ranging between 0.0034 to 1.6 mg/kg.
- Dibenz(a,h)anthracene [D(a,h)A] was detected at concentrations ranging between 0.0039 to 1.3 mg/kg.
- Indeno(1,2,3-c,d)pyrene [I(1,2,3-c,d)P] was detected at concentrations ranging between 0.004 to 1.8 mg/kg.

All other PAH compounds, with soil cleanup levels ranging between 2.7 mg/kg and 40 mg/kg were reported near or well below 1 mg/kg. The deep soil impacts occurred directly below or adjacent to the shallow soil exceedances, but have a smaller lateral extent (Figures B-3 and B-4). Detected compounds and concentrations also decreased with depth.

2.4.1.4 PCBs

PCBs were not detected above laboratory reporting limits in any soil samples collected during the SI (Table C-4).

2.4.1.5 Six Metals and Arsenic

Metals results are presented on Table C-5 and Figures B-5 and B-6.

- Arsenic was detected in 25 of 26 soil samples ranging between 1.2 mg/kg and 5.6 mg/kg.
- Cadmium was detected in 11 of 132 samples at concentrations ranging between 0.6 mg/kg and 2.8 mg/kg.
- Chromium was detected in 271 out of 272 samples analyzed at concentrations ranging between 6.3 and 1,000 mg/kg.
- Copper was detected in 206 out of 208 samples analyzed at concentrations ranging between 1.9 and 130 mg/kg.
- Lead was detected in 293 of 343 samples at concentrations ranging between 0.98 mg/kg and 1,300 mg/kg.
- Nickel was detected in 276 of 278 samples analyzed at concentrations ranging between 2.2 and 1,800 mg/kg.
- Zinc was detected 248 of 266 samples analyzed at concentrations ranging between 12 mg/kg and 520 mg/kg.

Figures B-5 and B-6 indicate screening levels for the six metals that were PCOCs in the SI (cadmium, chromium, copper, lead, nickel, and zinc). Metals were detected during the SI above screening levels. However, the SI concluded that elevated metal concentrations were not associated with Motor Pool releases. The lateral distribution of metal screening level exceedances appears to occur over the majority of the Study Area rather than to be related to releases from a source or sources (Figures B-5 and B-6). Additionally, the vertical distribution of exceedances does not appear to represent contamination, because at a number of deep soil exceedance locations, the sample above the deepest sample did not have concentrations exceeding contaminant screening levels.

The metal exceedances at the LTTD area may be related to the presence of the 633 Pistol Firing Range, which was located in the southwest corner of the Study Area (Figures B-5 and B-6, Appendix B). The lead exceedances were detected on the west side and northeast side of Building 610.

The fill material in the shallow subsurface of Crissy Field is known to contain chert and shale fragments and such fragments were observed in the SI soil borings. Higher copper and zinc concentrations may be related to the presence of chert and shale fragments in the fill material and/or fill material that may have mixed into the sand. Background levels for the Chert/Shale lithology (EKI, 2002) are substantially higher than for the Beach/Dune lithology for copper (360 versus 43 mg/kg) and zinc (120 versus 66 mg/kg).

Correlation coefficients developed as part of the SI indicated that none of the six metals is co-located with TPHd, TPHfo, or any of the detected PAHs. Correlation between nickel and chromium was high indicating that elevated levels of nickel are attributable to the same source as elevated levels of chromium, namely the presence of serpentinite in the fill material present beneath the Study Area. Thus, the metals do not appear to be attributable to anthropogenic sources related to Motor Pool activities, but are likely consistent with locally derived fill material (Treadwell & Rollo, 2003c). Based on the SI results, these metals were not retained as PCOCs.

2.4.1.6 Pesticides

With one exception, all six primary soil samples and one duplicate soil sample had no detectable concentrations of pesticides above the laboratory reporting limits (Table C-6). Alpha-chlordane and gamma-chlordane were detected at 0.006 mg/kg in sample T609SB01[2]. The summed value of these concentrations, 0.012 mg/kg is below the cleanup level of 0.04 mg/kg.

2.4.2 Soil Impact Summary

Based on the SI soil analytical results, impacted areas were identified in the Study Area that may require corrective action (Figure 8). These areas are summarized below.

- Building 613 Area

  The western portion of former Building 613 had reported detections for TPH and PAHs (Figure 8). These detections may be attributed to the former use of the building for vehicle repair activities. The impacted area is generally limited vertically to the upper five feet. The estimated impacted soil volume for the FDS Pipeline Area is approximately 2,097 yd^3.

- Building 628 Areas 1 and 2

  The southern section of former Building 628 located west of existing Building 610 had reported detections for TPH (Figure 8). These exceedances may be attributed to the former use of the building for vehicle maintenance activities. The impacted area is limited vertically to the upper five feet. The estimated impacted soil volume for Building 628 Area No. 1 is approximately 295 yd^3.

The second area, impacted with TPH and PAHs, was identified downgradient and north of former Building 628 (Figure 8). This impact area is limited in depth to the upper five feet and the estimated impacted soil volume for Building 628 Area 2 is approximately 175 yd^3.

- Building 619 Area

  TPH impacts have been identified downgradient of the former Building 619 sediment/oil separator located in the south central portion of existing Building 610 (Figure 8). The impacted area is generally limited in depth to the upper five feet. The estimated impacted soil volume for the Building 619 Area is approximately 583 yd^3.

- Building 626 Area

  TPH and PAHs impacts were in the vicinity of former Building 626 (Figure 8). These impacts are likely attributed to the former fueling and fuel distribution piping associated with Building 626. The impact area is limited vertically to the upper ten feet. The estimated impacted soil volume for the Building 626 Area is approximately 1,358 yd^3.

- Site 15 Area

  Data from the vicinity of Site 15 indicates soil impacts from TPH and PAHs. Fuel oil was reportedly stored at Site 15 (Figure 8). The impacted area is generally limited in depth to the upper six feet. The estimated impacted soil volume for the Site 15 Area is approximately 2,057 yd^3.

- TPHg Source Area

  Analytical results from the field sampling program identified one area of TPH and PAH impact at a location with no apparent historic contaminant source. The area is located northeast of existing Building 610 in an area where railroad tracks were historically located and includes Contingency Site 111098-1100 (Figure 8). The impacted area is limited vertically to the upper five feet. The estimated impacted soil volume for the TPHg Source Area is approximately 3,180 yd^3.

- FDS Pipeline Area

  TPH and PAH detections in this impacted area may be attributed to the former FDS pipeline and UST located directly upgradient. Fuel oil was reportedly stored in former FDS UST No. 1 (Figure 8). The impacted area is limited in depth to the upper five feet. The estimated impacted soil volume for the FDS Pipeline Area is approximately 1,449 yd^3.

- Pipeline A Areas 1 and 2

  Two areas with TPH and PAH impacts have been identified along the southern boundary of the Study Area south of existing Building 610 (Figure 8). These detections may be attributed to FDS Pipeline A formerly located in this area. Historically, fuel oil was conveyed through the pipeline as part of the FDS. The impacted area is generally limited

in depth to the upper five feet. The estimated impacted soil volume for Pipeline A Area 1 is 404 yd^3, for Area 2 is 510 yd^3 and for both Areas is approximately 914 yd^3.

- Pipeline C Area

  An area with TPH and PAH impacts has been identified along the western edge of the Study Area near Mason Street (Figure 8). These impacts may be attributed to FDS Pipeline C formerly located in this area. Diesel fuel was reportedly conveyed through Pipeline C from Building 637 (located further west of the Study Area) to Building 626. The impact area is limited in depth to the upper five feet. The estimated impacted soil volume for the FDS Pipeline C Area is approximately 222 yd^3.

- LTTD Area

  The PAH detections in the impacted area are generally limited in depth to the upper three feet with the western portion extending to five feet bgs (Figure 8). The estimated impacted soil volume for the LTTD Area is approximately 430 yd^3.

- FDS Pipeline Residuals and AST 634 Area

  The FDS Pipeline Residuals Area is located in the northwestern portion of the Study Area on the north side of Mason Street. Three impact areas have been identified which are related to fuel residuals remaining following removal and over excavation conducted by the Army in 1999 (Figure 8). A TPH impact was also identified in the shallow soil at the former AST 634 during the Commissary/PX SI. Former AST 634 was located directly north of Pipeline C and adjacent to removed FDS pipelines (Figure 8). The impact areas are limited in depth to the upper three feet. The estimated impacted soil volumes for these areas are: FDS Pipeline Residual Areas 1 and 2, each 140 yd^3, and FDS Pipeline Residual Area 3 and AST 634 Area, 873 yd^3.

In addition to the corrective action soil RUs, Figure 8 also shows the CERCLA sites where the evaluation and selection of remedail alternatives will be documented in a future RAP (MACTEC, 2004). A summary of the soil impacts related to these areas is presented below. Remediation at these areas will be addressed independently and separately from the actions authorized by this CAP.

- Eastern Railroad Tracks Areas 1 and 2 and Coal Storage Area

  Potential soil impacts from the historic railroad tracks and coal storage have been identified in the eastern portion of the Study Area just south of Mason Street near existing Building 605 (Figure 8). Exceedances for TPHfo and PAHs are indicated along four strips of the former railroad tracks. The impacted area is generally limited to the shallow soil. The estimated volume of impacted soil for Railroad Track Areas 1 and 2 is 826 yd^3. The estimated volume of impacted soil for the Coal Storage Area is 1,121 yd^3. The total estimated impacted soil volume for the Railroad Tracks and Coal Storage Areas is approximately 1,947 yd^3.

- Building 633 Firing Range

  Soil at the Building 633 Firing Range former backstop and firing line is impacted by metals and B(a)P. The volume of impacted soil is estimated to be 2,000 yd^3 (EKI, 2003).

2.4.3 Nature and Extent of Contamination in Groundwater

Groundwater analytical results for the Study Area were collected during the SI and as part of the Presidio-wide Quarterly Groundwater Monitoring Program as documented in the *Semi-annual Groundwater Monitoring Report First and Second Quarters 2003* (Treadwell & Rollo, 2003d) and the *Semi-annual Groundwater Monitoring Report Third and Fourth Quarters 2003* (Treadwell & Rollo, 2004a). Tables C-7 through C-11 present the SI and quarterly sampling results. Figure B-7 summarizes the SI analytical results for the groundwater grab samples and Study Area wells. Detected compounds include:

- PAHs: anthracene, B(a)A, B(a)P, B(b)F, benzo(g,h,i)perylene (B(g,h,i)P), B(k)F, chrysene, D(a,h)I, I(1,2,3-c,d)P, fluorene, fluoranthene, and pyrene;
- TPH: TPHd, TPHfo, and TPHg;
- VOCs: chlorobenzene, chloroform, ethylbenzene, MTBE, toluene, and xylenes; and
- Metals: arsenic, cadmium, chromium, copper, lead, nickel, and zinc.

A comparison of these groundwater results with applicable cleanup levels for the Study Area is provided below and in Section 3.3. For the potential groundwater COCs, the SI screening levels are identical to the CAP cleanup levels.

2.4.3.1 TPH

TPH was detected in four of the 52 groundwater grab samples, 3 of the 12 monitoring wells, and both seeps (Table C-7). The detected concentrations of TPHg, TPHd, and TPHfo are outlined below.

- TPHg has been detected at monitoring well 600GW101 at concentrations ranging from 230 to 630 micrograms per liter (µg/L). Historically, TPHg has been detected in samples from 610GW102 and 610GW103. In 2003, concentrations have ranged from <50 µg/L to 83 µg/L at 610GW102 and <50 µg/L to 110 Y µg/L in 610GW103. TPHg has also been detected in samples from both surface water seeps 610SP01 and 610SP02. During 2003 quarterly sampling, concentrations ranged from <50 µg/L to 100 Y µg/L at 610SP01 and 71 µg/L to 240 Y µg/L at 610SP02.

- TPHd was detected in one groundwater grab sample (619GG04) at 84 µg/L during the SI and historically in samples from three groundwater monitoring wells (600GW107, 610GW101, and 610GW103). In 2003, TPHd was only detected at 600GW107 where concentrations ranged from <50 µg/L to 170 HY µg/L and at 610GW103 where concentrations ranged from <50 µg/L to 62 Y µg/L. Although TPHd has historically been detected in samples from both seeps, it was not detected in the 2003 samples.

- TPHfo was detected in three SI groundwater grab samples 613GG11, 613GG12, and 619GG01 at concentrations of 350, 270 and 310 µg/L. TPHfo has also detected in 610GW101 at concentrations ranging up to 1,400 µg/L. In 2003, TPHfo was present at 610GW101 at <240 µg/L to 450 µg/L. TPHfo has not been detected in the seep samples.

Only TPHfo has been detected above its respective cleanup level at monitoring well 610GW101 and only in the First Quarter 2003. Subsequent sample results for TPHfo have generally been non-detect with one detection of 450 µg/L in the Third Quarter 2003.

2.4.3.2 VOCs, BTEX, and MTBE

Except for toluene at 0.5 µg/L (0.6 µg/L in the duplicate sample) in 601GG02 and total xylenes at 1.7 µg/L in 600SDGG03, BTEX were not detected in the SI groundwater grab samples (Table C-8). Benzene has only been detected once at well 610GW102 at 0.53 µg/L in the Fourth Quarter 2003. Historical detections of ethylbenzene have ranged from 0.69 C µg/L to 4.9 µg/L in samples from 610GW103. During 2003, ethylbenzene was only detected at seep 610SP02 at 1.7 µg/L and at 610GW103 at 0.69 C µg/L. Toluene and xylenes have been detected once at well 610GW101 at 0.81 and 0.71 µg/L, respectively. Xylenes have also been detected once at well 610GW103 at 0.64 µg/L. In 2003, MTBE was detected in 610GW101 and 610SP02 at concentrations of 3 and 15 µg/L, respectively.

Except for one detection of chlorobenzene at 1.1 µg/L in SI groundwater grab sample 610GG01 and low level detections of chloroform at 2.6 µg/L to 7.9 µg/L at monitoring well 600GW108, no other VOCs were detected in any of the groundwater samples (Table C-8). The SI screening levels for chlorobenzene and chloroform are 70 and 80 µg/L, respectively.

Only MTBE has been detected above its respective CAP cleanup level at seep 610SP02 in Third Quarter 2003 at 15 µg/L, just above the 13 µg/L cleanup level. It was not detected at this location in previous or subsequent sampling events.

2.4.3.3 PAHS

PAH results in groundwater are summarized in Table C-9. Of the 49 groundwater grab samples and nine monitoring wells sampled, a total of 14 PAHs have been detected including:

- Acenaphthene has been detected only at 600GW103 at concentrations of 5.6 to 9 µg/L.

- Two detections (600AG001and 600GW107) of B(a)A at 0.2 and 0.24 µg/L respectively;

- Six detections (600AGG01, 600GW102, 600GW103, 600GW107 and 600GW109) of B(a)P ranging from 0.15 in 600GW109 to 0.34 µg/L in 600GW103;
- Chrysene was detected in 600AGG01, 600GW104 and 600GW107 at concentrations ranging from 0.1 µg/L to 0.62 µg/L;
- Single detections of anthracene, B(b)F, B(k)F, B(g,h,i)P, D(a,h)A, I(1,2,3-c,d)P, and phenanthrene, all found in the first sample collected at 600GW107 at the following respective concentrations: 0.19, 0.34, 0.4, 0.15, 0.4, 0.21, and 0.51 µg/L.
- One detection of fluorene (600AGG01) at 0.3 µg/L;
- Two detections of fluoranthene, both in 600GW107, at concentrations ranging from 0.05 to 0.49 µg/L; and
- Two detections of pyrene in 600AGG01 and 600GW107 at 0.4 and 0.53 µg/L respectively.

Acenaphthene was the only PAH detected in groundwater samples in 2003 at well 600GW103 at 5.6 to 9 µg/L. B(a)A, B(a)P, B(b)F were detected at concentrations slightly above CAP cleanup levels in the First Quarter 2003 at 600GW107. In previous and subsequent sampling events, these PAHs were not detected at this location. B(a)A was also detected above the cleanup level at groundwater grab sample 600AGG01. B(a)P was also detected above CAP cleanup levels in the Fourth Quarter 2002 at 600GW103, but was below the 0.2 µg/L cleanup level in the First Quarter 2003 and has not been detected in subsequent sampling events.

2.4.3.4 Six Metals and Arsenic

Dissolved metals detected in groundwater samples include arsenic, cadmium, chromium, copper, lead, nickel and zinc (Figure B-7). A summary of dissolved metals results in groundwater is presented in Table C-10. Beginning with the Third Quarter 2003 sampling event, seep samples were analyzed for total metals instead of dissolved metals. The total metal results in the seep samples are generally higher than those previously reported for dissolved metals likely due to increased particulates in the unfiltered samples.

Dissolved arsenic was detected above the 5 µg/L detection limit in one of the five grab groundwater samples tested at 17 µg/L at 600RRGG02, which exceeded the cleanup level of 10 µg/L. Dissolved arsenic was also detected in samples from downgradient monitoring wells 600GW101 through 600GW104, Building 610 wells 610GW101 through 610GW103 and the two surface water seeps. Dissolved arsenic has also been detected in upgradient monitoring well 600GW107 at concentrations ranging from <5 to 7.1 µg/L. In the downgradient monitoring well samples, detected concentrations ranged from 1.1 µg/L at 610GW101 to 13 µg/L at 610GW102. In the seep samples, dissolved concentrations have ranged from 9 µg/L in 610SP02 to 19 µg/L in 610SP01. Total arsenic concentrations in the seep sample 610SP01 have been <5 µg/L and have ranged from <5 to 6.6 µg/L at 610SP01, though the duplicate sample concentrations were <5 and 220 µg/L.

Dissolved cadmium has not been detected in any of the groundwater samples. In the Third and Fourth Quarters 2003, total cadmium concentrations in seep sample 610SP01 were 1.2 and <1 µg/L, respectively, though the duplicate and control laboratory duplicate sample concentrations were <1 and 5.5 µg/L, respectively.

Dissolved chromium was detected in SI groundwater grab samples 600RRGG02, 613GG02, and 613GG03 at concentrations of 18 µg/L, 16 µg/L, and 20 µg/L, respectively. In monitoring well samples, the detected concentrations ranged from 1.1 µg/L to 6.3 µg/L. In the seep samples, dissolved chromium concentrations ranged from 1.2 to 3.2 µg/L. Total chromium concentrations have ranged from <10 µg/L to 21 µg/L at 610SP01 though the duplicate and control laboratory duplicate sample concentrations were 23 and 1,000 µg/L, respectively. In monitoring well samples, dissolved copper concentrations have ranged from 1 µg/L to 4.2 µg/L. Dissolved copper has also been detected in seep samples at concentrations ranging between 1.1 and 1.3 µg/L. Total copper in the seep samples has ranged from <1 to 18 µg/L at 610SP01. The Fourth Quarter 2003 results were 2.3 at 610SP02 and 2.4 at 610SP01, though the duplicate and control laboratory duplicate samples results were <1 and 320 µg/L, respectively.

Dissolved nickel has been detected in groundwater samples at concentrations ranging between 2.2 µg/L at 600GW101 to 11 µg/L at 600GW105. In 2003, total nickel was detected in seep sample 610SP01 at 65 to 1,400 µg/L (control laboratory duplicate sample).

Dissolved zinc was not detected in the 45 primary or seven duplicate groundwater grab samples collected during the SI. However, zinc was detected in eight of the monitoring well samples collected in September 2002 at concentrations ranging from 55 to 260 µg/L (Table C-10 and Figure B-7). Treadwell & Rollo collected the Phase 1 groundwater grab samples using QED Quickfilter™ and Blaine Tech collected the September 2002 groundwater monitoring well samples using Clearwater Engineering™ filters. Zinc has also been detected at higher than historic concentrations at other sites in the Presidio-wide Groundwater Monitoring Program sampled quarterly by Blaine Tech. It appears that the Clearwater Engineering™ filters used by Blaine Tech are associated with the zinc concentrations detected in the September 2002 monitoring round.

Based on the Phase 1 SI results and at the request of Treadwell & Rollo, Blaine Tech began using the QED Quickfilter™ brand filters in December 2002 for the Fourth Quarter 2002 sampling event. All groundwater samples collected for metals analyses during the Fourth Quarter 2002 and Phase 2 SI were field filtered by Blaine Tech using the QED Quickfilter™, prior to being placed in preserved containers.

Following the use of the QED Quickfilter™, zinc has not been detected in samples from the Study Area wells. Based on the zinc results from subsequent quarterly monitoring events, it is likely that the elevated zinc concentrations observed in the September 2002 samples are related to use of the Clearwater Engineering™ filters. The Clearwater Engineering™ filters were either

not effectively filtering the sample water or were contributing to concentrations of zinc in the samples, although the later scenario is not likely based on the filter blank sample results collected during the Third Quarter 2002. A more detailed discussion can be found in Section 5.4.3.4 of the *Draft Semi-annual Groundwater Monitoring Report, First and Second Quarters 2003, Presidio-wide Groundwater Monitoring Program* (Treadwell & Rollo, 2003d).

Total zinc results in the seep samples ranged from 74 J+ to 110 J+ µg/L, though again the control laboratory duplicate sample concentration was much higher at 920 µg/L.

Arsenic, chromium, copper, lead, nickel, and zinc have also exceeded CAP groundwater cleanup levels, with the arsenic exceedances being the most frequent. As described in Section 2.4.4, the metals other than arsenic were generally not detected above cleanup levels in subsequent sampling events.

2.4.3.5 PCBs

PCBs were not detected above laboratory reporting limits in any of the SI groundwater grab samples (Table C-11).

2.4.4 Groundwater Impact Summary

The SI concluded that groundwater impacts at the Study Area were minor (Figure B-7). Analytical results for all tested groundwater samples reported only TPHfo, MTBE, B(a)A, B(a)P, B(b)F, arsenic, chromium, copper, lead, nickel, and zinc concentrations above SI screening and CAP cleanup levels. The majority of the exceedances have been non-reoccurring, single exceedances over a timeframe of five consecutive quarterly groundwater sampling events.

<u>Organic Compounds</u>

Although not detected at concentrations above the cleanup levels, TPHg, ethylbenzene, toluene, and xylenes have been reported, primarily in the northwestern corner of the Study Area, where these compounds had been present prior to the Commissary Seeps Interim Source Removal Action (Section 2.3 and Figure 3) (Treadwell & Rollo, 2002a). Detection of these compounds may also be related to a former fueling area located upgradient of 600GW101. The detections and concentrations have decreased over time, as residual hydrocarbons undergo degradation. Other VOC detections (MTBE and chlorobenzene) were generally at low concentrations and were also isolated in extent and occurrence.

Groundwater detections of chloroform (2.6 µg/L to 7.9 µg/L) appear to be upgradient of the site and were all below screening levels. The source of the chloroform detected at well 600GW108 may be related to a leaking irrigation, water supply, or sewer line. Small amounts of chloroform are formed during the process of adding chlorine to potable water to destroy bacteria (http://www.eco-usa.net/toxics/chcl3.shmtl). Typical chloroform levels present in treated drinking water range from 2 to 44 µg/L. Chloroform has been detected at similar low levels at

other Presidio sites located upgradient of the Commissary/PX including the Building 1065 Area, the Building 207/231 Area, and Building 215. Chloroform is also frequently detected at low concentrations in the source water blank quality control samples of the Presidio-wide Quarterly Groundwater Monitoring Program (Treadwell & Rollo, 2004a).

Six Metals

As described in Section 2.4.3.4, the exceedance concentrations for dissolved zinc appear to have been related to the type of groundwater filter previously used by Blaine Tech in the quarterly sampling. Additionally, the chromium and lead exceedances detected in the Third and Fourth Quarters 2003 in the seep samples (610SP01 and 610SP02) are total metals results. At the request of DTSC, those seep samples were not filtered in order to collect data that can be used in health risk assessments rather than groundwater quality evaluations.

Dissolved copper has been detected once at concentrations above the CAP cleanup level (2.9 µg/L) from a total of 116 groundwater samples. The exceedance was reported from one of the seven samples analyzed from upgradient well 600GW105 (4.2 µg/L). Nickel (ranging between 7.3 and 11 µg/L) has been detected at concentrations slightly above the cleanup level (7.1 µg/L) in samples from well 600GW103 (one of 10 samples), well 600GW104 (two of 10 samples), and upgradient well 600GW105 (two of seven samples). These two metals have been detected at similar concentrations at other Presidio sites (Building 1349 and Fill Site 6) where these metals are not COCs (Treadwell & Rollo, 2004a) and appear to be within historical Presidio groundwater concentration ranges. Additionally, the fill material in the shallow subsurface of Crissy Field is known to contain chert, shale, and serpentinite fragments. Such fragments were observed in the SI soil borings. Background levels for the Chert/Shale lithology (EKI, 2002) are substantially higher than for the Beach/Dune lithology for copper (360 versus 43 mg/kg). Nickel concentrations in shallow SI soil samples were also higher than levels typical for the Beach/Dune lithology. Thus, the elevated copper and nickel groundwater concentrations are likely related to the higher copper and nickel levels in the fill soil at the Study Area.

Arsenic

Dissolved arsenic has been detected above the cleanup level of 10 µg/L in monitoring well and seep samples collected in the vicinity and downgradient of the Commissary Seeps Excavation (Figure 9). 610GW101 is located on the southern excavation boundary where concentrations have ranged from < 5 to 7.3 µg/L. 610GW102 is located in the former Commissary Seeps Excavation where concentrations ranged from 8.6 to 13 µg/L. Arsenic concentrations at 610GW103 have ranged between 4.7 to 13 µg/L from the Fourth Quarter 2002 through the Fourth Quarter 2003. During these same sampling events, arsenic has consistently been detected at both seeps (610SP01 and 610SP02) at concentrations ranging from 9 to 19 µg/L.

Arsenic soil analytical results did not exceed the soil cleanup level. Soil samples collected near the arsenic source group, the Coal Storage Area, were submitted for arsenic testing in addition to

downgradient well boring soil samples (Figure 9). Well 600GW103 is located near the Coal Storage Area and has had consistent detections of dissolved arsenic in groundwater ranging from 4 to 9.7 µg/L, below the cleanup level of 10 µg/L. Naturally-occurring arsenic is present in soil at low levels which were detected in the 24 samples analyzed at the Study Area and ranged from 1.2 to 5.6 mg/kg (Figure 9).

It is believed that elevated dissolved arsenic concentrations are related to naturally occurring arsenic in soil that is solubilizing into groundwater due to the existing subsurface geochemical or reducing environment related to the historical and current tidal marsh and the degradation of historical petroleum hydrocarbon releases at the Study Area (Figure B-7). Arsenic is generally more soluble and mobile under reducing conditions (Dragun, 1988, Saxena, et. al., 2004).

A comparison of the groundwater data to CAP cleanup levels is presented in Section 3.4.

3.0 SUMMARY OF SITE RISKS

This section presents the project's remedial action objectives (RAOs) and identifies the cleanup levels, COCs, and remedial units (RUs).

3.1 Remedial Action Objectives (RAOs)

RAOs are statements of the general goals of an environmental cleanup. For the cleanup remedies to be conducted at the Commissary/PX, the RAOs include the following:

- Protection of human health and the environment.
- Cost-effective cleanup of the Study Area consistent with its potential land use.
- Recycling excavated materials such as concrete and asphalt to the extent practicable.
- Compliance with State and Federal environmental laws.
- Consistency of the selected remedial alternatives at the Study Area with the overall transformation of the Presidio into a national park site.
- Preference for permanent ("clean closure") remedies whenever practicable, cost-effective, and consistent with current or anticipated land use.

3.2 Development of Cleanup Levels and Identification of COCs

Cleanup levels for petroleum hydrocarbons and related constituents are determined by the SCRs as adopted in the RWQCB Order. Cleanup levels for non-petroleum contaminants are based on the planned land use and site lithology(ies) and are have been developed consistent with the process in the *Development of Presidio-wide Cleanup Levels for Soil, Sediment, Groundwater, and Surface Water* (Cleanup Levels Document) (EKI, 2002).

The key factors that are used to develop cleanup levels for a given site are human health and ecological exposure as well as background metal concentrations. Cleanup levels are defined by the most sensitive population that is reasonably associated with the planned potential land use identified for a particular area (EKI, 2002). As described in the Cleanup Level Document, background metals concentrations are based on the predominant soil lithologies found in the Presidio. For any given site, the applicable cleanup level incorporates the planned potential human land use (residential, recreational, or institutional), the predominant soil or sediment lithology and its associated background metal concentrations, and potential ecological species present (including the presence of special status species).

3.2.1 Soil Cleanup Levels

Human health and ecological protection govern the selection of soil cleanup levels. The GMPA and PTMP calls for recreational land use at the Study Area. Residential cleanup levels are also being considered so that the site may be available for unrestricted use. Furthermore, in accordance with the RWQCB Order, this area is to serve as a saltwater protection zone for the Crissy Field tidal marsh. Per the Cleanup Level Document, the Study Area also falls within an Ecological Buffer Zone. The predominant lithology in the area is Beach/Dune Sand.

Site-specific soil cleanup levels are presented in Table 3. Tables 1, 2, and 6 of the RWQCB Order and Table 7-2 and 7-5 of the Cleanup Levels Document provide the soil cleanup levels presented in this table. Cleanup levels protective of human health for both recreational and residential land uses are listed, as well as the cleanup levels for ecological buffer zone and saltwater protection zones. The most stringent of these criteria has been selected as the cleanup level for the Study Area. The Quality Assurance Project Plan (QAPP) analytical reporting limits and laboratory detection limits are also listed. Although in several cases the QAPP analytical reporting limit exceeds the cleanup level, the laboratory detection limits are below the cleanup level for all compounds listed.

3.2.2 Groundwater Cleanup Levels

Protection of groundwater as a potential drinking water source and of the saltwater of the Crissy Field tidal marsh governs the selection of groundwater cleanup levels.

Site-specific groundwater cleanup levels are presented in Table 4. Cleanup levels for saltwater at the Presidio are listed, as well as those for drinking water. The most stringent of the two criteria has been selected as the groundwater cleanup level for the Study Area. The QAPP analytical reporting limits and laboratory detection limits are also listed. Although in several cases the QAPP analytical reporting limit exceeds the cleanup level, the laboratory detection limits are below the cleanup level for all compounds listed.

3.2.3 Soil COCs

Soil cleanup levels required by this CAP are found in Table 3. Analytical results from previous Trust soil tests at the Study Area (described in Section 2 above) and from the SI are provided and are compared to Commissary/PX CAP cleanup levels in Tables C-1 through C-6 (Appendix C). As noted in Tables C-1 through C-6 and Figures 10 through 13, TPHg, TPHd, and TPHfo as well as the following six PAHs were detected in soil at concentrations greater than applicable cleanup levels (Table C-3): B(a)A, B(a)P, B(b)F, B(k)F, D(a,h)A, and I(c,d)P.

As shown on Table C-5, metals were detected during the SI above CAP cleanup levels. However, as discussed in Section 2.4.1.5, the SI concluded that elevated metal concentrations

were not associated with Motor Pool releases. Therefore, the metals are not retained as soil COCs for the Commissary/PX Study Area.

The COCs in soil are TPHg, TPHd, TPHfo, and the following six PAHs: B(a)A, B(a)P, B(b)F, B(k)F, D(a,h)A, and I(c,d)P. For FDS Pipeline Residual Area 1 that was sampled by the Army as part of FDS closure activities (IT, 1999), soil COCs also include BTEX. Figures 14 and 15 illustrate the cleanup level exceedances in shallow and deep soil, respectively.

3.2.4 Groundwater COCs

Table 4 presents groundwater cleanup levels for the Study Area required by this CAP. Analytical data for groundwater at the Study Area were collected during the SI and as part of the Presidio-wide Quarterly Groundwater Monitoring Program as documented in the *Semi-annual Groundwater Monitoring Report First and Second Quarters 2003* (Treadwell & Rollo, 2003d) and the *Semi-annual Groundwater Monitoring Report Third and Fourth Quarters 2003* (Treadwell & Rollo, 2004a). Figure 16 presents the potential COCs and groundwater cleanup level exceedances. These data are summarized in Tables C-7 through C-11 (Appendix C).

Chemicals detected at concentrations above site cleanup levels in groundwater include TPHfo, MTBE, B(a)A, B(a)P, B(b)F, arsenic, chromium, copper, lead, nickel, and zinc. In general, the analytical results for all groundwater samples reported very few concentrations above the cleanup levels.

The First Quarter 2003 TPHfo cleanup level exceedance at 610GW101 (1,400 µg/L) may be related to residual hydrocarbons from the former Commissary Seeps Interim Source Removal remedial excavation area (Figure 16) (Treadwell & Rollo, 2003d). TPHfo concentrations for the subsequent 2003 sampling events have been less than the 1,200 µg/L cleanup level and ranged from <250 to 450 µg/L. TPHg has been detected nearby at 610GW102 and 610GW103 as well as at the two seep locations, though detections have been well below the 770 µg/L cleanup level. TPHd has been detected infrequently at these locations. TPHg has been consistently detected at 600GW101, but has remained below the cleanup level. MTBE has only been detected once at 15 µg/L at one location, 610SP02, just above the cleanup level of 13 µg/L and was not detected in previous or subsequent sampling events. Therefore, TPH and MTBE are not retained as groundwater COCs.

The PAH exceedances at 600AGG01, 600GW103, and 600GW107 (upgradient well) were only slightly above the cleanup levels and are single occurrences (Table C-9, Figure 16). 600AGG01 is a groundwater grab sample location. Groundwater grab sample data was excluded from COC determination for the Main Installation Sites FS if monitoring well data was available for the same site. Thus, 600AGG01 results were not used in the COC determination process. For the monitoring wells, B(a)A and B(b)F have been detected only once at one location where PAHs are soil COCs and in previous and subsequent sampling events were not detected. B(a)P has not

been detected or was present at concentrations below the cleanup levels in previous and/or subsequent sampling events. Therefore, PAHs are not retained as groundwater COCs.

As discussed in Section 2.4.4, the source of the arsenic exceedances at 610GW102, 610SP01, and 610SP02 may be linked to naturally occurring arsenic in area soils and the existing geochemical subsurface environment. As shown on Figure 9, dissolved arsenic concentrations at well 610GW102 from the Fourth Quarter 2002 through the Fourth Quarter 2003 have ranged from 8.6 to 13 µg/L, with results from three of the six sampling events ranging above the 10 µg/L cleanup level. Arsenic concentrations at 610GW103 over the same time period have ranged between 4.7 to 13 µg/L, with results from one of the five sampling events ranging above the 10 µg/L cleanup level. During these same sampling events, dissolved arsenic has consistently been detected at both seeps (610SP01 and 610SP02) at concentrations ranging from 9 to 19 µg/L with two of the dissolved arsenic results at each seep ranging above the 10 µg/L cleanup level. Due the numerous elevated detections, arsenic is retained as a groundwater COC.

As described previously in Section 2.4.3.4, zinc cleanup level exceedances appear to have been related to the type of groundwater filter initially used by Blaine Tech in the quarterly sampling. No zinc exceedances have occurred since a change was made in the type of field filter used, with the exception of a single sample from seep 610SP01 that was not filtered. Therefore, zinc is not retained as a COC in groundwater at this site.

As described previously in Section 2.4.4, the total chromium and lead exceedances for the unfiltered samples do not reflect dissolved concentrations. Dissolved chromium and lead were not detected above cleanup levels in the previously collected filtered samples. As part of the COC determination process outlined in the Main Installation Sites FS, unfiltered groundwater sample results were disregarded in determining groundwater COCs where filtered or dissolved groundwater sample data were available (EKI, 2003). Therefore, chromium and lead are not retained as groundwater COCs.

The nickel exceedance at 600GW104 and copper and nickel exceedances at 600GW105 (both upgradient wells at the Study Area) appear to be at concentrations which are consistent with groundwater concentrations for these metals at other Presidio sites such as Fill Site 6, located south and upgradient of the Commissary/PX (Treadwell & Rollo, 2004a). The exceedances at 600GW104 and 600GW105 also reflect the lower cleanup levels required for the ecological buffer zone status and not because of a release. Additionally, copper and nickel concentrations found in soil in the Study Area vicinity are higher than is typical for the Beach/Dune sand lithology, but appear to be related to the fill material in the shallow subsurface. Therefore, nickel and copper are not retained as groundwater COCs.

In summary, arsenic is the only groundwater COC for the Commissary/PX CAP.

3.3 Identification of Remedial Units (RUs)

Based on the SI soil analytical results, data associated with past corrective actions described in Section 2.3, and the cleanup level exceedances discussed above, 15 Soil Remedial Units (RUs) requiring corrective action have been identified in the Study Area. A Remedial Unit is a distinct area of contaminated soil or groundwater caused or created by a petroleum-related release that requires corrective action. The CAP Soil RUs are listed in Table 5 and shown on Figures 17 and 18. In general, the soil in these RUs is impacted with TPH (primarily TPHfo) and PAHs (primarily B(a)P). As described below, the CAP RUs have been grouped into categories that facilitate the remedial alternative evaluation and are based on the related source area and COCs, depth of contamination, accessibility, and surface cover. The evaluation and selection of remedial alternatives for the four CERCLA RUs (Figures 18 and 19) will be presented in a future RAP (MACTEC, 2004).

The total estimated volume of impacted soil requiring corrective action is 14,025 yd^3. As shown in Table 5, the RUs have been grouped into two main categories for purposes of evaluating remedial alternatives, the “Accessible” and “Less Accessible” Groups. The Accessible Group consists of RUs that are overlain by grass, pavement, or asphalt, which can be readily excavated, making these RUs relatively accessible for remediation. The Less Accessible Group consists of RUs that underlie the foundation slab of existing Building 610 (former Commissary), which unless the building were destroyed or moved, makes access far more difficult or infeasible.

For each RU, Table 5 presents a summary of the following: the estimated soil volume requiring remediation, the associated COCs, the depth of soil impacts, access, special setting considerations (archaeological or Area A), and the type of surface cover. As described in Table 5, the depth of COC contamination extends to 10 feet below the ground surface which incorporates approximately 5 feet below the groundwater table (i.e. in the capillary fringe or “smear zone” for petroleum contaminated sites). Smear zones are created when petroleum contamination comes in contact with a groundwater table and moves vertically as it rises and falls with fluctuations in the water table. In this CAP, smear zone contamination is being addressed as part of each Soil RU.

Arsenic is the only groundwater COC and is detected in the vicinity of the Former Commissary Seeps Interim Removal Action area and at a well downgradient of the former Coal Storage Area. Because of the limited extent and the nature of arsenic contamination, no formal groundwater RU has been established and an evaluation of groundwater remedial alternatives is not warranted. Instead, groundwater monitoring has been incorporated into each Accessible Soil RU remedial alternative.

4.0 EVALUATION OF ALTERNATIVES

The following section identifies potential remedial technologies that could be used to achieve the RAOs, discusses the screening of these remedial technologies pursuant to screening criteria, organizes combinations of viable technologies into corrective action alternatives, and evaluates these alternatives against the corrective action selection criteria.

4.1 Identification and Screening of Potential Soil Remedial Technologies

Factors that will ultimately be used in evaluating corrective action alternatives were also applied to initially screen potential remedial technologies identified for the Accessible and Less Accessible soil RUs of the Commissary/PX Study Area. The primary screening criteria are technical effectiveness, implementability, and cost.

1. Technical Effectiveness

Technical effectiveness refers to the ability of a technology to address: 1) the estimated area or volumes of media requiring remediation to meet the RAOs; 2) the potential impacts to human health and the environment during implementation and any construction; and 3) the long-term reliability and proven history of the technology with respect to the types of chemicals and conditions at the sites.

2. Implementability

Implementability refers to both the technical and institutional feasibility of implementing a particular remedial technology, including: 1) the likelihood of obtaining permits and approvals from regulatory agencies; 2) availability of appropriate treatment, storage, and disposal facilities (TSDFs); and 3) availability of the equipment, materials and skilled workers necessary to implement the particular technology.

3. Cost-Effectiveness

Cost-effectiveness includes assessment of the relative capital and operation and maintenance (O&M) costs associated with a particular technology. Costs are estimated using best engineering judgment at the time of the estimate. Cost-effectiveness weighs required expenditures against potential benefits, and is used to eliminate options that are substantially more expensive than other process options providing the same level of protection.

Not all potential remedial technologies are applicable to both Accessible and Less Accessible Areas. The potential technologies are:

- No action;
- Land Use Controls;
- Capping;

- *In situ* soil treatment;
- *Ex situ* soil treatment; and
- Excavation and off-site disposal, including recycling.

After screening, those technologies that become part of a comprehensive alternative (Section 4.5) are identified below as being suitable for Accessible Soil RUs, Less Accessible Soil RUs, or both types of RUs. As explained in Section 3.5, no groundwater remedial technologies or groundwater remedial alternatives were deemed warranted for this CAP. However, groundwater monitoring will be considered and incorporated into the development of remedial alternatives for the soil RUs.

No Action

The "no action" option is included in the evaluation as a baseline for comparison of other alternatives. The "no action" option serves as a reference for evaluating and comparing the technical effectiveness, implementability, and cost of other alternatives. The "no action" technology has therefore been retained for further analysis. It is applicable to both Accessible and Less Accessible Soil RUs.

Land Use Controls

Land use controls (LUCs) refer to restrictions on the potential future use of land based on the levels of contaminants that may be left on-site after cleanup. Implementation of LUCs would restrict future site disturbance or maintain site cover in order to minimize environmental exposure to any remaining site risks due to potential exposure to COCs. The Commissary/PX RUs are generally located in Area B of the Presidio with a smaller portion in Area A. Existing and planned land uses in Area B are directed by the Trust through its comprehensive land use and management plan, the PTMP (Trust, 2002). Land use controls for Area B remediation sites include restricting or controlling site uses by administrative procedures such as preparing a site-specific addendum to the Presidio Trust's Land Use Control Master Reference Report (LUCMRR). Trust planning/project proponents and members of the public may review all existing LUCs for the Presidio by reviewing the LUCMRR in the Trust Library. The Trust would notify DTSC and RWQCB of any proposed action that may disrupt the effectiveness of the LUCs, and any proposed action that could alter or eliminate the continued need for LUCs. For the portion of the corrective action sites in Area A, land use controls would be implemented according to NPS Area A requirements.

The Trust generally does not consider LUCs by themselves to meet RAOs for sites where contaminated materials remain left in-place and potentially exposed. LUCs may be used in combination with certain engineering controls (e.g., capping) that create a physical barrier between the contaminated material and human or ecological receptors. LUCs are used to protect the engineering controls by preventing soil disturbance and exposure.

The relative cost of this technology for moderate to large sized areas is low. LUCs are retained for further analysis for both Accessible and Less Accessible RUs in combination with other remedial technologies.

Capping

Capping involves either placing a synthetic surface layer (geotextile) or enhancing an existing surface cover (soil, asphalt, or concrete) over a site as a barrier to isolate and prevent exposure to human and/or ecological receptors to contaminants in the soil. A cap needs to be maintained, and intrusive activities would be restricted by specific land use controls. Groundwater monitoring would be included in any alternative using this technology. The purpose is to monitor for potential future impacts caused by remaining soil contamination.

Capping is retained for further analysis and consideration. It is applicable to both Accessible and Less Accessible Soil RUs.

In Situ Soil Treatment

Soil treatment technologies involve the reduction of the toxicity, mobility, or mass of COCs present in the subsurface soil without their removal from the site soil. *In situ* soil treatment technologies involve treating the soil in place without excavation. Table 6 provides a detailed assessment of the site-specific effectiveness of the various *in situ* treatment technologies and summarizes the relative effectiveness, implementability, and cost of the *in situ* remedial technologies considered. Soil treatment technologies evaluated include:

- Bioremediation technologies: biosparging, bioventing, and enhanced bioremediation with an oxygen release product;
- Sparging and extraction technologies: air sparging, ozone sparging, and soil vapor extraction; and
- Chemical oxidation technologies: hydrogen peroxide and sodium persulfate.

As described in Table 6, based on an evaluation of the site-specific effectiveness of the various *in situ* treatment technologies, as well as a consideration of their implementability and relative cost, bioventing combined with biospraging, oxygen release product injection, ozone sparging, and sodium persulfate injection are retained for further analysis for the Less Accessible Soil RUs. Based on the higher relative cost associated with application of *in situ* technologies over the larger Accessible RUs, *in situ* treatment technologies are not retained for the Accessible Soil RUs.

Ex Situ Soil Treatment

Ex situ soil treatment technologies treat contaminated site soils after they are excavated from the site. *Ex situ* soil treatment technologies include landfarming, ex-situ SVE, biopiles, or low-

temperature thermal desorption. *Ex situ* technologies have certain advantages over *in situ* methods, typically including easier verification sampling, greater process control, and lower unit cost. However, construction and operation of high profile (visibility, odors) *ex situ* soil treatment units is not desirable in this public, highly used and visited area. Therefore, *ex situ* methods are not retained for further evaluation for either type of Soil RU.

Excavation and Off-Site Disposal (supplemented by oxygen releasing product, if necessary)

Excavation is a practical source control measure that would be applicable to the conditions at the Commissary/PX Study Area sites. Conventional excavation technologies (e.g. excavators, backhoes, etc) can remove soil contamination to a depth of approximately 15 feet below ground surface, which is beyond the maximum anticipated depth of contamination at each Soil RU including any smear zone contamination. Removal of the impacted subsoil with subsequent verification sampling is consistent with the proposed future land use for the sites. Wood, asphalt, concrete and vegetative waste are not thought to be present in sufficient volumes at each soil RU to make recycling practicable. Off-site disposal moves hazardous material from its current location to an approved off-site disposal facility. As stated above, it is anticipated that conventional excavation technologies will be able to remove smear zone contamination. However, in the unlikely event that excavation technologies cannot remove all the deeper petroleum contamination, oxygen releasing product (e.g. ORC) can be placed in the excavation area to complete the remediation of any remaining contamination.

This technology is retained for further evaluation for both Accessible Soil RUs and Less Accessible Soil RUs.

4.2 Corrective Action Alternatives Considered

Based on screening of technologies for soil remediation described above, the following alternatives have been created for evaluation for the Accessible RUs and Less Accessible RUs. Groundwater monitoring is considered as a component of certain alternatives.

- Alternative 1 – No Action and Groundwater Monitoring-Well Abandonment (All Units)
- Alternative 2 – Capping and Land Use Controls with Groundwater Monitoring (All Units)
- Alternative 3 – *In Situ* Soil Remediation (Less Accessible Units Only)
- Alternative 4 – Excavation and Off-Site Disposal with Groundwater Monitoring (All Units)

Only Alternatives 2 and 4 expressly include groundwater monitoring. Because Alternative 2 does not involve the removal of impacted soil, that alternative includes monitoring of wells across the entire Commissary/PX Study Area. For Alternative 4, groundwater monitoring would be limited to the vicinity of the Commissary Seeps Interim Removal Area and Building 610.

Alternative 3, does not include groundwater monitoring because it will only be considered in combination with Alternative 4.

The comparative evaluation of alternatives is summarized in Tables 7a and 7b for Accessible and Less Accessible Soil RUs, respectively.

4.3 Criteria for the Evaluation of Corrective Action Alternatives

The three criteria in Section 4.1 used to screen technologies – technical effectiveness, implementability, and cost-effectiveness – are also applied in evaluating the corrective action alternatives. Encompassed within the evaluation of these criteria is the extent to which a proposed remedy mitigates the adverse effects of any unauthorized petroleum release. The evaluation looks at whether the remedy protects human health, ecological receptors, and water quality as well as whether it controls long-term risks, source contamination, and volume of contaminants. The remedy selected must be cost-effective.

Also to be considered will be the likelihood of applicable regulatory agency acceptance of the proposed corrective actions as well as public acceptance of the proposed action. The Draft CAP will be made available for stakeholder review and comment. All comments received will be considered prior to finalizing the CAP, and comments will be summarized and responded to in the final document.

4.4 Evaluation of Corrective Action Alternatives

The remedial alternatives evaluation for both the Accessible and Less Accessible Soil RUs is summarized in Tables 7a and 7b, respectively. A summary of the estimated costs for the alternatives for each type of soil RU is presented in Table 8. Detailed cost estimates for each alternative are presented in Tables D-1 through D-9 (Appendix D).

Each soil remedial alternative is evaluated based on the extent to which it meets the evaluation criteria. Groundwater monitoring and monitoring well abandonment costs are included in Accessible RUs alternatives only, because Less Accessible RU alternatives will always be combined with an Accessible RU corrective action for implementation.

The following sections identify and evaluate remedial alternatives for soil RUs.

4.4.1 Alternative 1 - No Action (All Units)

Alternative 1 provide no additional control or protection to human health or the environment for the contamination that exists at the Study Area. This alternative abandons existing groundwater monitoring wells. Consequently, the groundwater would not be monitored to assess any impacts due to existing contamination and all existing potential exposure pathways would remain uncontrolled. Therefore, this alternative does not prevent visitor, tenant, or resident exposures,

does not protect against impacts to groundwater, and therefore does not protect human health, safety and the environment. The "no action" alternative provides no technical effectiveness, since no remedial action is undertaken and COCs would not be reduced. The total estimated cost of this alternative for both the Accessible and Less Accessible Soil RUs (combined) is $65,000 (Table D-1). It is not considered cost-effective because, although low in cost, it fails to address any site impacts of the petroleum releases.

4.4.2 Alternative 2 - Capping and Land Use Controls with Groundwater Monitoring (All Units)

Alternative 2 maintains existing asphalt and concrete cover over the soil RUs and places caps over uncovered soil RUs to isolate the contaminated soil from human exposure. Because only a portion of contaminated soil is not removed, this alternative includes the development and implementation of LUCs to safeguard the cap, provide advance notice of site conditions in the event of future ground disturbing activity, and restrict future land uses to those compatible with safeguarding the integrity of the cap. At unpaved landscape areas, impacted soil would be excavated to a depth that will allow placement of a geosynthetic clay liner (GCL) which would be covered with a vegetative soil layer. Impacted soil would be removed for off-site disposal. Building 628 Area No. 2 RU is an archaeological sensitive area related to a Native American burial site and cultural relics identified in prior studies (Treadwell & Rollo, 2002b). To protect these resources, work at this site would be monitored as outlined in Section 5.4. Such monitoring is not expected to significantly impact the associated cost of this alternative.

The alternative also includes 10 years of groundwater monitoring for potential impacts due to remaining soil contamination.

Capping of contaminants would be protective of human health, safety, and the environment, as it would eliminate the potential for contaminant exposure through soil ingestion, dermal contact, and inhalation. Land use controls would also be required to prevent direct contact with the contaminated soil and future land uses inconsistent with levels of contamination remaining on site and to establish procedures for the management of contaminated soil, if encountered in the future. This alternative is technically effective if caps are maintained and LUCs imposed. Long-term groundwater monitoring would provide a long-term assessment of groundwater quality. Although no active treatment of soil will be performed, the potential for migration of COCs from soil into groundwater would be reduced based on the reduced potential for surface water infiltration provided by the cover. Capping with LUCs is readily implementable, particularly because part of the Study Area is already capped with asphalt and concrete. Construction of the cap would involve some design and construction improvements to existing cover. The capital cost for this alternative for both the Accessible and Less Accessible RUs (combined) is $480,000, plus $169,000 annual O&M costs over 10 years, for a total estimated cost of $1,886,000 (Table D-2).

4.4.3 Alternative 3 – In Situ Soil Remediation (Less Accessible Units)

Alternative 3 is limited in its application to only Less Accessible Soil RUs located beneath existing buildings in the Commissary/PX Study Area. This alternative is not considered for application in Accessible Soil RUs due to the large number of cost-prohibitive borings or wells that would be required to obtain appropriate and effective product distribution.

This remedy alternative involves the *in situ* treatment of impacted soil to reduce the existing concentrations of COCs below cleanup levels. The subsections below describe and evalute four *in situ* treatment alternatives for the Less Accessible RUs. Technologies that will be considered for future implementation under this alternative include: 1) oxygen release product injection, 2) bioventing/biosparging, 3) ozone sparging, and 4) sodium persulfate injection.

Building 610 is currently leased and occupied by a leasehold tenant. With the exception of bioventing/biospraging, *in situ* treatment technologies cannot be implemented practicably until Building 610 is unoccupied. This alternative includes interim LUCs that will be in place during tenant occupancy. LUCs will restrict site and soil disturbance and maintain cover until the building is vacated in order to protect potential receptors from exposure to COCs.

Application of this alternative would be protective of human health, ecological receptors, and water quality since the *in situ* technologies available under this alternative would reduce the concentration of contaminants in the soil. Long-term O&M is not required with the exception of confirmation soil sampling approximately 6 months after commencement of *in situ* treatment. Additional treatment and confirmation sampling may be required if cleanup levels are not achieved with the first application. This alternative is technically effective in the long-term because active treatment of soil contamination reduces petroleum contaminants until cleanup levels are met. Long-term LUCs would be applied if the *in situ* technology is unable to achieve cleanup levels. The decision regarding which *in situ* technology to implement under this alternative would be made at the remedial design phase. Subject to the *in situ* technology selected, the capital cost of this alternative in the Less Accessible Soil RUs, with no O&M costs, is estimated at a total cost of $424,000 to $647,000 (Tables D-3 though D-6).

4.4.4 Alternative 4 - Excavation and Off-site Disposal (All Units)

Alternative 4 involves excavaton and removal of all contaminanted soil where COCs are present above cleanup levels, followed by waste characterization, transport to, and disposal of waste materials at an approved off-site disposal facility. Based on information collected during the SI, the estimated volume of soil in Accessible areas is 12,652 cy. For Less Accessible areas, the estimated volume of soil is 1,373 cy. During excavation, confirmation samples would be collected from the excavation floor and sidewalls to ensure that soils exceeding cleanup criteria have been removed. For the Less Accessible RUs, this alternative could be implemented only following the eventual demolition of Building 610. This alternative includes groundwater monitoring for arsenic and TPH at the Commissary Seeps and Building 610 area. For costing

purposes, five years of quarterly groundwater monitoring in the Commissary Seeps and Building 610 area was assumed. Building 628 Area No. 2 RU is an archaeological sensitive area related to a Native American burial site and cultural relics identified in prior studies (Treadwell & Rollo, 2002b). To protect these resources, work at this site would be monitored as outlined in Section 5.4. Such monitoring is not expected to significantly impact the associated cost of this alternative.

This alternative also includes the eventual abandonment of existing groundwater monitoring wells upon regulatory approval.

For Accessible RUs, Alternative 4 would be protective of human health, safety, and the environment, because the shallow soil contamination is removed, thereby eliminating potential human and ecological exposures to contaminants. The excavated soil would be transported off-site to a facility approved to manage the waste. This remedy is technically effective and permanent. Contaminated soil is removed, thereby preventing worker and visitor exposures and impacts to groundwater. Although the volume of contaminants will not be reduced because the impacted material will not be treated, potential exposure of workers and the public to contaminated materials during excavation and loading for off-site transport would be mitigated by engineering and dust control measures. This alternative is implementable and no significant obstacles have been identified. Additionally, long term O&M would not be required. This alternative also includes groundwater monitoring for arsenic and TPH at existing wells in the vicinity of the Commissary Seeps removal action and Building 610. The capital cost for this alternative for the Accessible Soil RUs would be $1,692,000 and the annual cost of groundwater monitoring for five years is $85,000. The total cost for this alternative in the Accessible Soil RUs is $2,076,000 (Tables 8 and D-7).

For Less Accessible RUs, Alternative 4 would be protective of human health, safety, and the environment, because the soil contamination is removed, thereby eliminating potential human and ecological exposures. The excavated soil would be transported off-site to a facility approved to manage the waste. This remedy is technically effective and permanent. Contaminated soil is removed, thereby preventing worker and visitor exposures and impacts to groundwater. Although the volume of contaminants would not be reduced because the impacted material will not be treated, potential exposure of workers and the public to contaminated materials during excavation and loading for off-site transport would be mitigated by engineering and dust control measures. Due to the contamination occurring beneath the Building 610 foundation slab, Alternative 4 is not as easily implementable at Less Accessible RUs with Building 610 in place. In addition, the cost of this alternative is higher relative to the small volume of contaminated soil to be addressed at Less Accessible units. The capital cost for this alternative for the Less Accessible Soil RUs is $708,000 (Tables 8 and D-8).

This alternative includes interim LUCs that would be in place until Building 610 is no longer tenant occupied or is demolished and excavation can be implemented. LUCs will restrict site and soil disturbance and maintain cover to protect potential receptors from exposure to COCs.

However, in the event that Building 610 is demolished and removed at any time in the future, this alternative would then be readily implementable. Once the building is removed, the capital cost for this alternative for the (formerly) Less Accessible Soil RUs would be $360,000 and the annual cost of interim land use controls for five years is $1,000, thus the total cost is $365,000 (Tables 8 and D-9).

4.5 Recommended Alternatives

The recommended corrective action alternatives are described below.

4.5.1 Accessible Soil RUs

The recommended alternative for the Accessible soil units is Alternative 4, Excavation and Off-Site Disposal, with contingent use of Alternative 3, *In Situ* Treatment, under specified circumstances.

Under the recommended Alternative 4, all petroleum-contaminated soil would be removed and disposed of off-site at an approved disposal facility. Excavation would continue until soil confirmation sampling results indicate that cleanup levels for the soil COCs specified in Table 3 are met according to provisions in Section 5.0. In the unlikely event that petroleum contamination is beyond the reach of conventional excavation technologies at any of the Accessible Soil RUs, upon regulatory approval, *in situ* treatment under Alternative 3 would be introduced into the excavation area to remediate remaining petroleum contamination.

As described in Section 5.5, this alternative includes surface water and groundwater monitoring for arsenic and TPH at the Commissary Seeps removal area and Building 610. This alternative also includes the eventual abandonment of existing groundwater monitoring wells upon regulatory approval.

Alternative 4 is recommended for implementation at Accessible Soil RUs because it is technically effective, readily capable of implementation and cost-effective. Although this alternative is higher in cost than Alternative 2 (capping), contaminated soil is removed permanently from the site, thus eliminating the potential for future exposures.

4.5.2 Less Accessible Soil RUs

The long-term use and occupancy of Building 610 is not yet certain or now known. Therefore, the recommended remedy for Less Accessible Soil RUs is contingent upon the future use of Building 610. If demolition of Building 610 has begun within 5 years of the date of the Final CAP, the recommended alternative for the Less Accessible soil units is Alternative 4, Excavation and Off-Site Disposal. Under the recommended Alternative 4, all petroleum-contaminated soil would be removed and disposed of off-site at an approved disposal facility. Excavation would continue until soil cleanup levels for the COCs specified Table 3 are met according to provisions

in Section 5.0. In the unlikely event that once the existing building is removed, petroleum contamination is beyond the reach of conventional excavation technologies, upon regulatory approval, *in situ* treatment under Alternative 3 may be introduced into the excavation area to remediate remaining petroleum contamination.

If demolition of Building 610 has not begun within five years of the date of the Final CAP, the recommended alternative for the Less Accessible soil units is Alternative 3, *In Situ* Soil Treatment. Work to implement Alternative 3 may begin at any time during this five year period. Under this alternative, an oxygen release product or chemical oxidant would be injected into soil beneath the floor slabs of Building 610. After sufficient time has elapsed, confirmation samples will be collected to test the effectiveness of the remediation and determine whether cleanup levels specified in Table 3 have been achieved. During the five year period after the date of the Final CAP or until the corrective action at the Less Accessible Soil RUs achieves cleanup levels, the Trust will impose interim LUCs regarding the soil contamination at Building 610. The LUCs will restrict site and soil disturbance and maintain cover to protect potential receptors from exposure to COCs. If upon completion of the corrective action the confirmation soil sampling results indicate that the corrective action did not achieve site cleanup levels for soil, then LUCs will continue to be implemented until Building 610 is demolished and Alternative 4 (Excavation and Off-Site Disposal) can be implemented. The Trust would notify DTSC and RWQCB of any proposed action that may disrupt the effectiveness of the LUCs, and any proposed action that could alter or eliminate the continued need for LUCs. If upon completion of the corrective action the confirmation sampling results indicate that the corrective action did achieve CAP soil cleanup levels, the LUCs will be withdrawn.

The combined costs of Alternative 4 for the Accessible RUs and Alternative 3 for the Less Accessible RUs are $2.5 to $2.7 million. If Building 610 is demolished, the combined cost of Alternative 4 at both the Accessible RUs and Less Accessible RUs is $2.4 million.

Alternative 4 with a contingent remedy of Alternative 3 is recommended for implementation at Less Accessible Soil RUs because this combination best meets the three corrective action evaluation criteria. The recommended remedy combines the permanently protective remedy of excavation in circumstances where it is most feasible and most cost-effective with the possibility of *in situ* treatment to reduce contaminant load in the event excavation is not feasible. Therefore, the recommended alternative is fully protective of human health, safety, and the environment.

5.0 IMPLEMENTATION OF PREFERRED ALTERNATIVE

Implementation of the CAP remedies including confirmation sampling and groundwater and surface water monitoring, archaeological monitoring, applicable laws and regulatory requirements, and schedule are discussed below.

5.1 Remedy Implementation

The corrective actions set forth in Section 4.5.1 for Accessible Soil RUs and in Section 4.5.2 for Less Accessible RUs will be implemented by the Trust. Upon regulatory agency approval of the Final CAP, separate implementation Work Plans (called CAP Work Plans) will be prepared for the Less Accessible and Accessible Areas. The Accessible Areas CAP Work Plan will be prepared first and will include the details of the groundwater and surface water monitoring program described in Section 5.5.

5.2 Soil Confirmation Sampling Program

Confirmation soil sampling will be conducted specific to each recommended remedial alternative.

5.2.1 Less Accessible Areas

The confirmation soil sampling program for Less Accessible Areas will be detailed in the Less Accessible Areas CAP Work Plan. Samples will be analyzed for all COCs exceeding cleanup levels, which include the following constituents:

- PAHs by EPA Method 8270C; and
- TPHg, TPHd and TPHfo by EPA Method 8015 modified and EPA Method 3630A - Silica Gel Cleanup.

5.2.2 Accessible Areas

It is anticipated that after the impacted materials have been removed, the exposed land surface will consist of excavation "bottom" with the perimeter of the excavation having "sidewalls."

Bottom sampling will be based on the estimated size of the excavation with a minimum of one sample per excavation and at least one per 2,500 square feet (sf). A 50- by 50-foot sampling grid will be used to guide the collection of excavation bottom samples.

Sidewalls will be sampled at the midpoint of the excavation's height every 50 feet of its lateral extent or to obtain at least one sample per excavation sidewall.

The actual physical dimensions of the excavation will determine the number of bottom and sidewall samples collected. All confirmation samples for the excavations will be analyzed for the following COC constituents:

- PAHs by EPA Method 8270C; and
- TPHg, TPHd and/or TPHfo by EPA Method 8015 modified and EPA Method 3630A - Silica Gel Cleanup.

Additionally, confirmation samples collected at FDS Residual Area 1 will also be tested for BTEX by EPA Method 8260B.

5.3 Applicable State and Federal Laws and Regulatory Requirements

Implementation of the selected corrective action alternatives will comply with applicable state and federal laws and regulations including the requirements of Title 23, Division 3, Chapter 16, Article 11, which are the primary regulations establishing the requirements and standards for petroleum-related corrective action in the State of California. The alternatives will also comply with applicable laws and regulations regarding management and disposal of excavated soil, including transport to and treatment at regulated and permitted facilities. As detailed in the RWQCB Order, the Commissary/PX Study Area is a known petroleum contamination site requiring preparation and implementation of this CAP meeting the requirements of 23 CCR § 2725 (2004). The RWQCB Order presents cleanup standards as SCRs for the protection of human health, ecological receptors, and water quality, which have been used to set the applicable CAP cleanup levels. In addition, the RWQCB Water Quality Control Plan for the San Francisco Bay Region (known as the Basin Plan) (RWQCB, 1995), pertaining to water quality within the state, has been taken into account in establishing the CAP cleanup levels.

The Presidio as a whole is within the Golden gate National Recreation Area (GGNRA) and is listed in the National Register of Historic Places as a Historic Landmark, which affords its historic resources and cultural landscapes certain protection under the national Historic Preservation Act (NHPA). The NPS and Trust Programmatic Agreements which set forth the procedures to implement the historic compliance process of Section 106 of the NHPA will be followed for Area A and Area B, respectively. In addition, archeological sites and resources are known to exist or may be discovered within the Presidio. During corrective action implementation, the Trust will comply with applicable provisions of the Archeological and historic Preservation Act (AHPA) and the Native American Graves Protection and Repatriation Act (NAGPRA). Other federal and state statutes, such as the federal and state Endangered Species Acts (ESA and CESA), the Migratory Bird Treaty Act (MBTA), and the Coastal Zone Management Act (CZMA) also provide standards for protection of natural resources found on the Presidio that will be followed during this corrective action.

For portions of the Commissary/PX within Area A of the Presidio, the Trust will protect park resources in accordance with the GGNRA Act and the Organic Act while performing corrective actions at the Commissary/PX. The corrective action will be completed in a manner consistent with land uses established by the GMPA and the Area A MOA. For portions of the Commissary/PX within Area B of the Presidio, the corrective action will be completed in a manner consistent with land uses established by the PTMP. NPS Management Policies and the Presidio Vegetation Management Plan (Trust and NPS, 2001) apply to corrective action work in both Area A and Area B.

With regard to soil excavation and disposal, state laws and regulations implement the federal Resource Conservation and Recovery Act (RCRA) standards and are applicable to the corrective actions at the Commissary/PX Study Area. These provisions include standards for properly storing, handling and transporting excavated soils that may contain hazardous constituents. These regulations also set standards for testing of potential hazardous wastes prior to management and proper off-site disposal.

The impacted soil at the Study Area is not believed to be hazardous waste. The transport and disposal of non-hazardous waste that may be generated during the corrective action will be performed in accordance with the pertinent sections of Title 27 of the California Code of Regulations, which addresses the proper management of solid wastes.

The corrective actions at Commissary/PX Study Area take into account the RWQCB Basin Plan policy of no loss of wetlands as well as Presidio wetlands resources (NPS and Trust, 2003). Any applicable discharge prohibitions and erosion control measures will protect surface water and wetland resources. Also, Bay Area Air Quality Management District (BAAQMD) regulations pertinent to dust suppression and onsite air monitoring during excavation work will be met to prevent air quality impacts from the selected remedial actions. Although not anticipated to be present, if unknown USTs are found during remedial activities, removal will comply with applicable state and local requirements.

5.4 Archaeological Monitoring

Portions of the Study Area are known to be archaeologically sensitive and remedial work will be conducted in accordance with NHPA and ARPA.

The Building 628 Area No. 2 RU is an archaeological sensitive area related to a Native American burial site and cultural relics identified in prior studies (Treadwell & Rollo, 2002b). Work at this site will be monitored per the Programmatic Agreement for the Presidio between the Trust and the State Historic Preservation Officer. The Trust will arrange to have Native American observers present during remedial activities within in this area. Work will only be performed following coordination with and approval by Trust and NPS historians and archaeologists. If items of archeologically or historically sensitive importance are found or suspected to be present, field personnel will contact the Trust and NPS immediately.

Through the Trust Project Manager, the remedial action will be coordinated with Trust and NPS naturalists, historians, and archaeologists regarding sensitive areas that may exist at or near the Study Area and take appropriate precautions during the field investigation. Sampling in sensitive areas or historic areas will only be performed following coordination with and approval by Trust and NPS naturalists, historians and archaeologists.

5.5 Groundwater and Surface Water Monitoring

Additional groundwater and surface water monitoring for arsenic and TPH is included as part of the recommended alternative. The minimum requirements for the groundwater and surface water monitoring program is presented in Table 9.

It is proposed that six existing wells (610GW101 through 610GW103 and 600GW101, 600GW105, and 600GW106) and two existing surface water seeps (610SP01 and 610SP02) be used to monitor groundwater quality in the area of the former Commissary Seeps Interim Removal Action and Building 610 (Figure 8). The minimally required analytical methods and sampling frequency for each method as shown in Table 9 will be incorporated into the sampling and analytical program for the Presidio-wide Quarterly Groundwater Monitoring Program (Treadwell & Rollo, 2003d).

The groundwater elevations will be measured quarterly. Groundwater and surface water samples, including QA/QC samples (duplicates, equipment blanks, and trip blanks), will be collected and analyzed at the frequency described above and in accordance with the *Presidio-wide Quality Assurance Project Plan* (Tetra Tech EM Inc., 2001) for the constituents presented below and in Table 9.

- Dissolved arsenic and iron by EPA Method 6010/6020;
- Sulfate and sulfide by EPA Method 376.2;
- TPHg, TPHd, and TPHfo by EPA Method 8015 modified and EPA Method 3630A - Silica Gel Cleanup; and
- DO and Oxidation Reduction Potential by field probe.

As stated in Section 5.1, the details regarding the groundwater and surface water monitoring program will be presented in the Accessible Areas CAP Work Plan for regulatory review and approval and will include the sampling and analysis plan, the data evaluation and review process, and the criteria for monitoring program duration, reductions, and revisions.

Groundwater monitoring wells at the Commissary/PX Study Area that are not included in groundwater or surface water monitoring required by this CAP may be abandoned pursuant to regulatory approval.

5.6 Implementation Schedule

Upon final regulatory approval by RWQCB of the Final CAP, all deliverables and corrective actions authorized by the CAP will be prepared and implemented according to the schedule, as amended, required by the Board Order. The Board Order schedule currently requires that remedy construction at the Commissary/PX Study Area begin by 15 August 2005.

Upon regulatory agency approval of the Final CAP, the Accessible Areas Work Plan for CAP implementation of the recommended alternative will be prepared and implemented, once approved. The Less Accessible Areas CAP Work Plan will be prepared once the disposition of Building 610 is known.

As required by the current Board Order, a report documenting implementation of the Accessible RU remedial actions and construction completion and groundwater monitoring results will be issued on or before 15 September 2006. An addendum report will be prepared documenting implementation of the Inaccessible RU remedial actions and construction completion. This addendum report will be issued to the RWQCB within 6 months of completing the Less Accessible RU remedial action.

REFERENCES

Argonne National Laboratory, 1989. *Enhanced Preliminary Assessment Report, Presidio of San Francisco Military Reservation*. November.

Brown, 2003. *In Situ Chemical Oxidation: Performance, Practice, and Pitfalls.* AFCEE Technology Transfer Workshop. February.

California Regional Water Quality Control Board (RWQCB), 1995. *Water Quality Control Plan, San Francisco Bay Basin, San Francisco Bay Region.* June.

RWQCB, 2003. *Order No. R2-2003-0080, Revised Site Cleanup Requirements and Rescission of Order No. 91-082 and Order No. 96-070 for the Property located at the Presidio of San Francisco*. August.

Dames & Moore, 1997. *Final Remedial Investigation Report, Presidio Main Installation, Presidio of San Francisco*. January.

California Department of Toxic Substances Control (DTSC), the Presidio Trust (Trust), and National Park Service (NPS), 1999. *Consent Agreement Between the California Department of Toxic Substances Control, the Presidio Trust, and the US Department of the Interior, National Park Service for the Remediation of Hazardous Substances at the Presidio of San Francisco.* 30 August.

Dragun, James, 1988. *The Soil Chemistry of Hazardous Materials*, Hazardous Materials Control Research Institute.

Earth Tech, 1995. *Base Realignment and Closure Cleanup Plan.* November.

Erler & Kalinowski, Inc. (EKI), 1997. *Crissy Field Comprehensive Remedial Action Plan Summary, Presidio of San Francisco, California*. November.

EKI, 1998. *Alternate Remedial Actions for Presidio Main Installation Sites and Public Health Service Sites*. May.

EKI, 1999. Final *Corrective Action Plan Building 637 Area, Presidio of San Francisco, California*. August.

EKI, 2000. *Excavation Report for the Building 637 Area, Presidio of San Francisco, California.* June.

EKI, 2001. *Draft Development of Presidio-wide Cleanup Levels for Soil, Sediment, Groundwater, and Surface Water*. October.

EKI, 2002. *Development of Presidio-wide Cleanup Levels for Soil, Sediment, Groundwater, and Surface Water*. October.

REFERENCES
(continued)

EKI, 2003. *Revised Final Feasibility Study Report for Main Installation Sites, Presidio of San Francisco, California.* March.

EKI, 2004. *Building 637 Area Completion Report, Presidio of San Francisco, California.* March.

Golden Gate National Park Association (GGNPA), 1998. Soil Observation Field Report Form. 10 November.

IT Corporation (IT), 1997a. *Records Research Report, Commissary Study Area, Presidio of San Francisco, California.* December.

IT, 1997b. *Report of Petroleum Hydrocarbon Bioassay and Point-of-Compliance Concentration Determinations, Saltwater Ecological Protection Zone, Presidio of San Francisco, California*. December.

IT, 1998. *Site Investigation Work Plan, Commissary/Post Exchange Study Area, Presidio of San Francisco, California*. October.

IT, 1999. *Fuel Distribution System Closure Report, Presidio of San Francisco, California, Volumes 1 through 3*. May.

KVA, 2004. *Perozone*^{TM} *Chemical Oxidation System.* http://www.kva-equipment.com. July.

MACTEC, 2004. *Remedial Action Plan, Baker Beach Disturbed Areas 1, 1A, 2, and 2A and Twenty-Seven Other Sites, Presidio of San Francisco, California.* (In preparation).

Montgomery Watson and Golder Associates Inc., 1995a. *Assessment of the Presence of Unsubstantiated Storage Tanks, Presidio of San Francisco, California*. October.

Montgomery Watson, 1995b. *Draft Phase I Investigation of Fuel Distribution Systems, Presidio of San Francisco, California.* November.

Montgomery Watson, 1995c. *Fuel Product Action Level Development Report, Presidio of San Francisco, California*. October.

Montgomery Watson, 1996a. *LTTD Pretreatment Baseline Soil Sampling at the Motor Pool Area, Letter Report, Presidio of San Francisco, California*. May 1.

Montgomery Watson, 1996b. *Draft Basewide Groundwater Monitoring Plan, Presidio of San Francisco*. July 31.

Montgomery Watson, 1998a. *On-Site Soil Treatment Using Low Temperature Thermal Desorption, Final Project Report, Presidio of San Francisco, California*. June.

REFERENCES
(continued)

Montgomery Watson, 1998b. *Tank Removal Documentation Reports (UST No. FDS-1, UST No. 603), Presidio of San Francisco, California*. July.

Montgomery Watson, 1999a. *Additional Investigation of Fuel Distribution Systems, Presidio of San Francisco, California*. August.

Montgomery Watson, 1999b. *Draft Final Building 207/231 Area Corrective Action Plan, Presidio of San Francisco, California*. August.

Parsons Brinckerhoff (Parsons), 2001. *Preliminary Geotechnical Report, Doyle Drive Environmental and Design Study, Revision 0*. May.

Presidio Trust (Trust), 1999a. *Letter Regarding Crissy Field Area Contingency Plan Site 171199-1100: Seeps in Southwest Corner of the Tidal Marsh, Commissary Area, Area A, Presidio of San Francisco*. 19 November.

Trust, 1999b. *Letter Regarding Crissy Field Area Contingency Plan Site 171199-1100: Seeps in Southwest Corner of the Tidal Marsh, Commissary Area, Area A, Presidio of San Francisco*. 29 November.

Trust, 2002. *Presidio Trust Management Plan, Land Use Policies for Area B of the Presidio of San Francisco, California*. May.

Presidio Trust and NPS, 2001a. *Vegetation Management Plan and Environmental Assessment for the Presidio of San Francisco.* May.

Regenesis, 2003. *Oxygen Release Compound Overview*. October 10.

Saxena, V. K. et. Al, 2004. *Occurrence, Behavior and Speciation of Arsenic in Groundwater*. Current Science, Vol. 86, No. 2

Tetra Tech EM Inc. (Tetra Tech), 2001. *Presidio-wide Quality Assurance Project Plan, Sampling and Analysis Plan, Presidio of San Francisco,* Revision 1 April.

Treadwell & Rollo, 2001. *Draft Quarterly Groundwater Monitoring Report, Second Quarter 2001, Quarterly Groundwater Monitoring Program, Presidio of San Francisco, California.* November.

Treadwell & Rollo, 2002a. *Draft Commissary Seeps Interim Source Removal Action Report, Presidio of San Francisco, California*. January.

Treadwell & Rollo, 2002b. *Site Investigation Work Plan for the Commissary/PX Study Area, Presidio of San Francisco, California*. July.

REFERENCES
(continued)

Treadwell & Rollo, 2002c. *Remedial Action Plan (RAP) and Evaluation of Alternatives for Landfill 4 and Fill Site 5, Presidio of San Francisco, California*. September.

Treadwell & Rollo, 2003a. *Draft Quarterly Groundwater Monitoring Report for the Third Quarter 2002, Quarterly Groundwater Monitoring Program, Presidio of San Francisco.* February.

Treadwell & Rollo, 2003b. *Draft Quarterly Groundwater Monitoring Annual Summary Report for the Fourth Quarter 2002, Quarterly Groundwater Monitoring Program, Presidio of San Francisco.* May.

Treadwell & Rollo, Inc., 2003c. *Draft Site Investigation Report Commissary/Post Exchange Study Area Presidio of San Francisco, California*. August.

Treadwell & Rollo, Inc., 2003d. *Semi-Annual Groundwater Monitoring Report First and Second Quarters 2003 Presidio Wide Quarterly Groundwater Monitoring Program, Presidio of San Francisco, California.* October.

Treadwell & Rollo, Inc., 2004a. *Semi Annual Groundwater Monitoring Report Third and Fourth Quarters 2003 Presidio Wide Quarterly Groundwater Monitoring Program, Presidio of San Francisco, California.* April.

Treadwell & Rollo, Inc. 2004b. Personal conversation with Mr. Elliot Cooper of Vironex Environmental Field Services. June.

U.S. Department of the Army (Army), Headquarters, I Corps, and Fort Lewis and California Department of Toxic Substances Control (DTSC), 1998. *Final Remedial Action Plan, Crissy Field Area, Presidio of San Francisco.* April.

U.S. Department of Interior, National Park Service (NPS), 1994. Creating a Park for the 21st Century, from Military Post to National Park-*Final General Management Plan Amendment, Presidio of San Francisco, California.* July.

Presidio Trust and NPS, 2001. *Vegetation Management Plan and Environmental Assessment for the Presidio of San Francisco*. May.

NPS and Trust, 2003. *Presidio Wetlands Resources: U.S. Army Corps of Engineers Potential Jurisdictional Wetlands and U.S. Fish and Wildlife Wetland Habitat on the Presidio of San Francisco.* April.

U.S. Environmental Protection Agency (EPA), 1986. *Test Methods for Evaluating Solid Waste in Laboratory Manual Physical/Chemical Methods*. Third Edition: Volumes 1A, 1B, 1C SW-846. Revisions through 1996.

REFERENCES
(continued)

EPA. 1987. *A Compendium of Superfund Field Operations Methods*. Prepared by the Office of Emergency and Remedial Response.

EPA, 1988. CERCLA Compliance with Other Laws Manual (Interim Manual), EPA Office of Solid Waste and Emergency Response (OSWER) Directive 9234.1-01. August.

EPA, 1989. CERCLA Compliance with Other Laws Manual: Part II, Clean Air Act and Other Environmental Status and State Requirements (Interim Final), OSWER Directive 9234.1-02. August.

EPA, 1999. *Data Quality Objectives Process for Hazardous Waste Site Investigations; EPA QA/G-4HW. Peer Review Draft.* June.

EPA, Office of Management and Budget, 2000a. *Circular A-94, Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs.* February

EPA, 2000b. *A Guide to Developing and Documenting Cost Estimates During the Feasibility Study*. July.

EPA, 2004. Website: *CLU-IN – Air Sparging*: http://www.clu-in.org/techfocus Accessed July.

EPA, 2004. Website: *CLU-IN* – Biosparging:: http://www.clu-in.org/techfocus Accessed July.

EPA, 2004. Website: *CLU-IN* – Bioventing: : http://www.clu-in.org/techfocus Accessed July.

Youngkin, Mark, 1996a. Letter to Mr. Dave Wilkins re: *Comments on Draft Final Remedial Investigation (RI) Report, Building 609, Commissary Investigation, Presidio of San Francisco.* 17 June.

Youngkin, Mark, 1996b. Letter to Mr. Dave Wilkins re: *Submittal of Historical Environmental Document Survey*. 24 June.

TABLES

Table 1
Groundwater Elevation Summary
Commissary/PX Study Area
Presidio of San Francisco, California

Well ID	Date	Tidal Cycle	Average Depth to Water [1] (feet)	Top of Casing Elevation (feet PLLW)	Groundwater Elevation (feet PLLW)	Well Type
600GW101	12/1/2003	--	4.38	10.66	6.28	MW
	8/11/2003	Low	4.52	10.66	6.14	MW
	6/2/2003	Low	4.51	10.66	6.15	MW
	3/10/2003	Low	3.21	10.66	7.45	MW
	12/2/2002	Low	4.62	10.66	6.04	MW
600GW102	12/1/2003	--	4.12	10.10	5.98	MW
	8/11/2003	Low	4.12	10.10	5.98	MW
	6/2/2003	Low	4.21	10.10	5.89	MW
	3/10/2003	Low	2.75	10.10	7.35	MW
	12/2/2002	Low	4.21	10.10	5.89	MW
600GW103	12/1/2003	--	3.41	10.31	6.90	MW
	8/11/2003	Low	2.86	10.31	7.45	MW
	6/2/2003	Low	2.95	10.31	7.36	MW
	3/10/2003	Low	2.79	10.31	7.52	MW
	12/2/2002	Low	3.37	10.31	6.94	MW
600GW104	12/1/2003	--	3.51	10.48	6.97	MW
	8/11/2003	Low	3.08	10.48	7.40	MW
	6/2/2003	Low	2.98	10.48	7.50	MW
	3/10/2003	Low	2.95	10.48	7.53	MW
	12/2/2002	Low	3.58	10.48	6.90	MW
600GW105	12/1/2003	--	4.83	17.64	12.81	MW
	8/11/2003	Low	4.87	17.64	12.77	MW
	6/2/2003	Low	5.55	17.64	12.09	MW
	3/10/2003	Low	3.30	17.64	14.34	MW
	12/2/2002	Low	4.60	17.64	13.04	MW
600GW106	12/1/2003	--	4.51	16.04	11.53	MW
	8/11/2003	Low	4.41	16.04	11.63	MW
	6/2/2003	Low	4.51	16.04	11.53	MW
	3/10/2003	Low	3.22	16.04	12.82	MW
	12/2/2002	Low	4.50	16.04	11.54	MW
600GW107	12/1/2003	--	5.23	16.76	11.53	MW
	8/11/2003	Low	4.98	16.76	11.78	MW
	6/2/2003	Low	4.48	16.76	12.28	MW
	3/10/2003	Low	4.08	16.76	12.68	MW
	12/2/2002	Low	4.82	16.76	11.94	MW
600GW108	12/1/2003	--	4.12	12.29	8.17	MW
	8/11/2003	Low	4.72	12.29	7.57	MW
	6/2/2003	Low	4.39	12.29	7.90	MW
	3/10/2003	Low	3.82	12.29	8.47	MW
	12/2/2002	Low	4.23	12.29	8.06	MW

Table 1
Groundwater Elevation Summary
Commissary/PX Study Area
Presidio of San Francisco, California

Well ID	Date	Tidal Cycle	Average Depth to Water [1] (feet)	Top of Casing Elevation (feet PLLW)	Groundwater Elevation (feet PLLW)	Well Type
600GW109	12/1/2003	--	4.87	11.67	6.80	MW
	8/11/2003	Low	4.65	11.67	7.02	MW
	6/2/2003	Low	4.31	11.67	7.36	MW
	3/10/2003	Low	3.85	11.67	7.82	MW
	12/2/2002	Low	4.52	11.67	7.15	MW
610GW101	12/1/2003	--	3.28	9.91	6.63	MW
	8/11/2003	Low	3.49	9.91	6.42	MW
	6/2/2003	Low	3.55	9.91	6.36	MW
	3/10/2003	Low	2.39	9.91	7.52	MW
	12/2/2002	Low	3.44	9.91	6.47	MW
	8/26/2002	Low	3.68	9.91	6.23	MW
	5/28/2002	High	3.59	9.91	6.32	MW
	5/28/2002	Low	3.63	9.91	6.28	MW
	3/4/2002	High	3.85	9.91	6.06	MW
	3/4/2002	Low	3.32	9.91	6.59	MW
610GW101	11/26/2001	High	3.25	9.91	6.66	MW
	11/26/2001	Low	3.25	9.91	6.66	MW
	8/27/2001	High	3.60	9.91	6.31	MW
	8/27/2001	Low	3.64	9.91	6.27	MW
610GW102	12/1/2003	--	3.82	10.29	6.47	MW
	8/11/2003	Low	3.92	10.29	6.37	MW
	6/2/2003	Low	4.10	10.29	6.19	MW
	3/10/2003	Low	2.75	10.29	7.54	MW
	12/2/2002	Low	3.94	10.29	6.35	MW
	8/26/2002	Low	4.16	10.29	6.13	MW
	5/28/2002	High	4.08	10.29	6.21	MW
	5/28/2002	Low	4.12	10.29	6.17	MW
	3/4/2002	High	5.02	10.29	5.27	MW
	3/4/2002	Low	3.83	10.29	6.46	MW
	11/26/2001	High	3.72	10.29	6.57	MW
	11/26/2001	Low	3.74	10.29	6.55	MW
	8/27/2001	High	4.11	10.29	6.18	MW
	8/27/2001	Low	4.13	10.29	6.16	MW
610GW103	12/1/2003	--	4.67	11.17	6.50	MW
	8/11/2003	Low	4.88	11.13	6.25	MW
	6/2/2003	Low	4.19	11.13	6.94	MW
	3/10/2003	Low	3.20	11.13	7.93	MW
	12/2/2002	Low	4.79	11.13	6.34	MW
	8/26/2002	Low	5.26	11.13	5.87	MW
	5/28/2002	High	5.13	11.13	6.00	MW
	5/28/2002	Low	5.11	11.13	6.02	MW
	3/4/2002	High	3.37	11.13	7.76	MW
	3/4/2002	Low	4.94	11.13	6.19	MW

Table 1
Groundwater Elevation Summary
Commissary/PX Study Area
Presidio of San Francisco, California

Well ID	Date	Tidal Cycle	Average Depth to Water [1] (feet)	Top of Casing Elevation (feet PLLW)	Groundwater Elevation (feet PLLW)	Well Type
610GW103	11/26/2001	High	4.83	11.13	6.30	MW
	11/26/2001	Low	4.85	11.13	6.28	MW
	8/27/2001	High	5.29	11.13	5.84	MW
	8/27/2001	Low	5.33	11.13	5.80	MW
610SP01	12/1/2003	--	Not flowing	--	Y	Surface
	8/11/2003	Low	Not flowing	--	--	Surface
	6/2/2003	Low	--	--	--	Surface
610SP02	12/1/2003	--	Not flowing	--	Y	Surface
	8/11/2003	Low	Not flowing	--	--	Surface
	6/2/2003	Low	--	--	--	Surface

Notes
1 - Depth to water reading was measured from the northernmost side of the casing, unless otherwise noted.
Depth to water measurements were collected quarterly at all site wells.
all depth to water measurements are an average of three measurements recorded in the field.
MW- Monitoring well
feet PLLW - feet above Presidio lower low water vertical datum

Table 2
Previous Investigation Results and Corrective Actions Summary
Commissary/PX Study Area
Presidio of San Francisco, California

Building Number and Investigation Site Designation	Investigation and Removal Action Description	Potential Contaminant of Concern Identified	Status
T609 Commissary Sampling	Household pesticide container breaks in former Commissary (T609). Cleanup contracted. Soil samples collected during Remedial Investigation (RI) at Building 610, west of former T609. The results from 3 soil samples collected indicated low levels for dieldrin (up to 0.012 µg/g) and ppDDT (up to 0.13 µg/g) and 1,1-dichloro-2,2-di(4-chlorophenyl)ethane (DDE) (0.008 µg/g) (Dames & Moore, 1997) (Youngkin, Mark, 1996a).	1,1-dichloro-2,2-di(4chlorophenyl)ethene (DDT)	These detections exceed possible screening levels. Recommended soil sampling conducted and reported as part of the Commissary/PX SI. Included in *Remedial Action Plan, Baker Beach Disturbed Areas 1, 1A, 2, and 2A and Twenty-Seven Other Main Installation Sites* (MACTEC, 2004).
633 Pistol Range Sampling	20 shallow soil samples (<2.5 feet) collected during Base-wide RI at site detected lead up to 659 µg/g (Dames & Moore, 1997).	Lead	Included in *Remedial Action Plan, Baker Beach Disturbed Areas 1, 1A, 2, and 2A and Twenty-Seven Other Main Installation Sites* (MACTEC, 2004).
Low Temperature Thermal Desorption (LTTD) Facility Sampling	This area served as a gasoline refueling facility serviced by AST 634. The area has recently been used for a low-temperature thermal desorption (LTTD) facility for soil remediation. A baseline soil condition investigation prior to LTTD startup collected 20 near-surface (12 to 16 inches deep) soil samples throughout the LTTD area (Montgomery Watson, 1996a). Analytical results report soil containing diesel in the area.	TPHg, TPHd, BTEX, PAHs, Pb	Included in Commissary/PX CAP.
637 Corrective Action Plan (CAP) Implementation	Adjacent to the Study Area, historical records show this was a main fuel storage area for the Motor Pool. Above ground storage tanks (ASTs) and USTs and piping were removed. Site was investigated and CAP implemented (EKI, 2000). Groundwater monitoring as part of Presidio	TPHg, TPHd, BTEX, and Pb	*Building 637 Area Completion Report* currently under regulatory review (EKI, 2004).

Table 2
Previous Investigation Results and Corrective Actions Summary
Commissary/PX Study Area
Presidio of San Francisco, California

Building Number and Investigation Site Designation	Investigation and Removal Action Description	Potential Contaminant of Concern Identified	Status
	Quarterly Groundwater Monitoring Program (Treadwell & Rollo, 2001).		
Crissy Field Remedial Action Plan (RAP) Implementation	Investigation and remedial action performed at former Fill Site 7, Crissy Field Rifle Institute and Skeet Ranges (on-shore area) and Building 900's Area (including Buildings 923/937, 924 Firing Range, 950, and 979) (Army and DTSC, 1998).	TPHg, TPHd, TPHfo, PAHs, VOCs, metals	Groundwater monitoring at Building 900s is ongoing. *Crissy Field Operable Unit 4 Implementation Report, Presido of San Francisco* (EKI, 2004) under regulatory review.
UST 603 Removal	A 1,000-gallon diesel UST was removed in 1996 with an excavation 25 feet long by 21 feet wide by 5.5 feet deep. 5 soil samples and 1 groundwater sample were collected. TPHd (600 mg/kg) and TPHmo (96 mg/kg) Maximum concentrations were in soil and TPHd (6,800 µg/L) and TPHmo (220 µg/L) in groundwater (Montgomery Watson, 1998b).	TPHd, TPHfo, toluene, xylenes, PAHs	Included in Commissary/PX CAP.
626 Waste Oil Tank Removal	Waste oil tank identified and removed during Commissary construction.10 soil samples collected, (exact location unknown) report "total fuel hydrocarbons" range between 96 mg/kg and 5,900 mg/kg (Youngkin, 1996).1 soil sample analyzed for VOCs was non-detect for all analytes.	TPHd, benzene, toluene, xylenes, PAHs	Included in Commissary/PX CAP.
Underground Storage Tank (UST) No. FDS-1 Removal	A 1,000-gallon diesel UST removed in 1996 with an excavation 21 feet long by 19 feet wide by 5.5 feet deep. 6 soil and 1 groundwater sample collected, Maximum concentrations were TPHd (1,900 mg/kg) and TPHmo (1,900 mg/kg) in soil and TPHd (99 µg/L) and TPHmo (1,100 µg/L) in groundwater (Montgomery Watson, 1998b).	TPHd, TPHfo, toluene, xylenes, PAHs	Included in Commissary/PX CAP.

Table 2
Previous Investigation Results and Corrective Actions Summary
Commissary/PX Study Area
Presidio of San Francisco, California

Building Number and Investigation Site Designation	Investigation and Removal Action Description	Potential Contaminant of Concern Identified	Status
FDS Pipeline BR6-5 Removal	Section of FDS pipeline removed and over-excavated. 28 soil samples collected from the limits of the excavation and analyzed for TPH and PAHs. Detected concentrations up to >1,925 mg/kg for TPH and 3.245 mg/kg for total carcinogenic PAHs (Montgomery Watson, 1999).	TPH, PAHs	Included in Commissary/PX CAP.
Contingency Site 171199-1100 and Commissary Seeps Interim Source Removal Action	Seep sampling performed in 1999 by the Trust detected TPHg, toluene, ethylbenzene, and xylenes at concentrations below cleanup levels for saltwater aquatic organisms. The Trust continued to monitor the seeps, and investigations were performed to identify the source area. Groundwater seeps to the new Crissy Field tidal marsh contained low concentrations of TPHg and TPHd. Source identified in vicinity of former Buildings 621 through 624 fueling area and 655. Interim Source Removal Action Plan implemented during summer of 2001 (Treadwell & Rollo, 2002a). Area excavated, sampled, and backfilled. All soil confirmation sample results at excavation limits were below proposed cleanup levels. *Draft Interim Source Removal Action Report* (Treadwell & Rollo, 2002a).	TPHg, TPHd, BTEX, and Pb	Included in Commissary/PX CAP to determine whether additional corrective action is required. Ongoing groundwater monitoring as part of Presidio Quarterly Groundwater Monitoring Program (Treadwell & Rollo, 2000).
FDS Pipelines CF-3, CF4, and CF-12 Removal	Three sections of FDS pipeline (CF-3, CF-4, and CF-12) were removed and over-excavated. At CF-3, 2 of 5 soil samples exceeded soil action level (SAL) for TPHfo (1,000 mg/kg) and one for TPHd at 3 feet bgs. At CF-4, 4 of 10 soil samples exceeded SAL for TPHg (640 and 1,500 mg/kg) and TPHd (870 mg/kg) at 2 feet bgs. At CF-12, 2 of 8 samples exceeded SAL for TPHg (2,700 mg/kg), TPHfo (1,500 mg/kg), benzene (12 mg/kg), Ethylbenzene (12 mg/kg), and toluene (44 mg/kg) at 2.5 feet bgs (IT, 1999).	CF-3 - TPHfo CF-4 - TPHg, TPHd CF-12 - TPHg, TPHfo, benzene, toluene	–CF 4 and CF-12 are included in Commissary /PX CAP. CF-3 exceedances were remediated as part of the Building 637 Corrective Action.

Table 2
Previous Investigation Results and Corrective Actions Summary
Commissary/PX Study Area
Presidio of San Francisco, California

Building Number and Investigation Site Designation	Investigation and Removal Action Description	Potential Contaminant of Concern Identified	Status
Contingency Site 111098-1100	Fuel-impacted soil was discovered in 1998 during communication line excavation work. The western portion of this site was excavated as part of the Commissary Seeps Interim Source Removal Action. SI and Trust groundwater grab samples collected south and north of the site were non-detect for TPH.	TPH	No further action is necessary for the western portion of the site where source removal completed under Commissary Seeps Interim Source Removal Action. The eastern portion is included in the Commissary/PX CAP.

Notes:

BTEX - benzene, toluene, ethlyene, and xylenes
FDS - Fuel Distribution System
mg/kg - milligrams per kilogram
Pb - lead
PAHs - polycyclic aromatic hydrocarbons
TPHd - total petroleum hydrocarbons as diesel
TPHfo - total petroleum hydrocarbons as fuel oil (using a motor oil standard with carbon range C_{24}-C_{36})
TPHg - total petroleum hydrocarbons as gasoline.
TPHmo - total petroleum hydrocarbons as motor oil
VOCs - volatile organic compounds
µg/g - micrograms per gram
µg/L - micrograms per liter

Army and DTSC, 1998. *Final Remedial Action Plan, Crissy Field Area, Presidio of San Francisco*. April.
Dames & Moore, 1997. *Final Remedial Investigation Report, Presidio Main Installation, Presidio of San Francisco.* January.
EKI, 2000. *Excavation Report for the Building 637 Area, Presidio of San Francisco, California.* June.
EKI, 2002. *Development of Presidio-Wide Cleanup Levels for Soil, Sediment, Groundwater, and Surface Water*. October.
EKI, 2004. *Building 637 Area Completion Report, Presidio of San Francisco, California.* March.
IT, 1999. *Fuel Distribution System Closure Report, Presidio of San Francisco, California, Volumes 1 through 3*. May.

Table 2
Previous Investigation Results and Corrective Actions Summary
Commissary/PX Study Area
Presidio of San Francisco, California

<u>Notes (Continued):</u>

MACTEC, 2004. *Remedial Action Plan, Baker Beach Disturbed Areas 1, 1A, 2, and 2A and Twenty-Eight Other Main Installation Sites, Presidio of San Francisco, California.* (In preparation).

Montgomery Watson, 1996a. *Low Temperature Thermal Desorption (LTTD), Pretreatment Baseline Soil Sampling at Motor Pool Area Letter Report, Presidio of San Francisco, California.* 1 May.

Montgomery Watson, 1998b. *Tank Removal Documentation Reports, (UST No. FDS-1, UST Number 603), Presidio of San Francisco, California.* July.

Montgomery Watson, 1999a. *Additional Investigation of Fuel Distribution Systems, Presidio of San Francisco, California.* August.

Treadwell & Rollo, 2001. *Draft Quarterly Groundwater Monitoring Report Second Quarter 2001, Quarterly Groundwater Monitoring Program, Presidio of San Francisco.* November.

Treadwell & Rollo, 2002a. *Draft Commissary Seeps Interim Source Removal Action Report, Presidio of San Francisco*. January.

Youngkin, 1996a. Youngkin, Mark, Letter to Mr. Dave Wilkins re: Comments on Draft Final Remedial Investigation (RI) Report, Building 609, Commissary Investigation, Presidio of San Francisco. 17 June.

Youngkin, 1996b. Youngkin, Mark, Letter to Mr. Dave Wilkins re: *Submittal of Historical Environmental Document Survey.* 24 June.

FDS Pipeline CF-3 Removal - Section of FDS Pipeline removed and over-excavated.

Table 3
Soil Cleanup Levels
Commissary/PX Study Area
Presidio of San Francisco, California

Constituent	Human Health Recreational Cleanup Level (mg/kg)	Human Health Residential Cleanup Level (mg/kg)	Ecological Buffer Zone and Salt Water Protection Zones Cleanup Level (mg/kg)	Effective Soil Cleanup Level[1] (mg/kg)	QAPP Analytical Reporting Limits (mg/kg)	Laboratory Detection Limit (mg/kg)
Petroleum Hydrocarbons and Gasoline-related VOCs						
TPH as gasoline (C_7-C_{12})	2,400	1,030	11.6	11.6	1.0	0.001
TPH as diesel (C_{12}-C_{24})	3,200	1,380	144	144	10	0.001
TPH as fuel oil (C_{24}-C_{36})[2]	4,500	1,900	144	144	10	0.005
Benzene	1.5	0.6	50	0.6	0.005	0.005
Toluene	1,200	840	260	260	0.005	0.005
Ethylbenzene	1,900	530	5	5	0.010	0.005
Total Xylenes	2,500	1,080	22	22	0.005	0.005
MTBE	--	--	190	190	--	0.020
Metals						
Arsenic	0.88	0.36	64	5.9 [3]	0.2	0.25
Cadmium	4.2	1.7	0.23	1.7 [3]	0.1	0.25
Chromium	2,800	1,200	23	120 [3]	0.2	0.5
Copper	--	--	120	43 [3]	0.2	0.5
Lead	500	400	300	300	0.1	0.15
Nickel	3,500	1,400	71	71	0.2	1
Zinc	52,000	22,000	50	66 [3]	0.2	1
PAHs						
Anthracene	13,800	5,900	40	40	0.33	0.005
Benzo(a)anthracene	0.65	0.27	40	0.27	0.33	0.005
Benzo(a)pyrene	0.065	0.027	40	0.027	0.33	0.005
Benzo(b)fluoranthene	0.65	0.27	40	0.27	0.33	0.005
Benzo(g.h.i)perylene	1,400	620	40	40	0.33	0.005
Benzo(k)fluoranthene	0.65	0.27	40	0.27	0.33	0.005
Chrysene	6.5	2.7	40	2.7	0.33	0.005
Dibenz (ah) anthracene	0.19	0.78	40	0.19	0.33	0.005
Fluoranthene	1,900	820	40	40	0.33	0.005
Fluorene	1,800	770	40	40	0.33	0.005
Indeno(1,2,3-cd)pyrene	0.65	0.27	40	0.27	0.33	0.005
Naphthalene	1,100	480	40	40	0.33	0.005
Phenanthrene	1,400	600	40	40	0.33	0.005
Pyrene	1,400	620	40	40	0.33	0.005

Notes

[1] Cleanup levels for soil are based on the most stringent of the values for protection of human health (recreational and residential land use), protection of ecological receptors (saltwater ecological protection zone and ecological buffer zone), and maintaining drinking water standards in groundwater (soils less than 5 feet above groundwater). Sources: Table 7-2 (non-petroleum compounds) and Table 7-5 (petroleum hydrocarbons and constituents) in the Cleanup Levels Document (EKI, 2002) as well as Tables 1, 2, and 6 in Order No. R2-2003-0080 Site Cleanup Requirements, Presidio of San Francisco (RWQCB, 2003).

[2] TPH as fuel oil uses a motor oil standard for carbon range C24-C36.

[3] In the case of metals, if the background concentration for Beach/Dune Sand is greater than the most stringent cleanup level, then the background concentration applies as the cleanup level. Source: Table 7-2 (non-petroleum compounds) in the Cleanup Levels Document (EKI, 2002).

Shading indicates target cleanup level.
mg/kg - milligrams per kilogram
MTBE - Methyl tert-butyl ether
PAHs - Polycyclic aromatic hydrocarbons
TPH - Total petroleum hydrocarbons
-- - No cleanup level available

Table 4
Groundwater Cleanup Levels
Commissary/PX Study Area
Presidio of San Francisco, California

Constituent	Salt Water Cleanup Level (µg/L)[1]	Drinking Water Cleanup Level (µg/L)[2]	Effective Groundwater Cleanup Level (µg/L)[3]	QAPP Analytical Reporting Limits (µg/L)	Laboratory Detection Limit (µg/L)
Petroleum Hydrocarbons and Gasoline-related VOCs					
TPH as gasoline (C_7-C_{12})[4]	1,200	770	770	50	50
TPH as diesel (C_{12}-C_{24})[4]	2,200	880	880	50	50
TPH as fuel oil (C_{24}-C_{36})[4,5]	2,200	1,200	1,200	300	300
Benzene	510	1	1	0.01	0.5
Toluene	1,000	150	150	0.05	0.5
Ethylbenzene	43	700	43	0.5	0.5
Xylene	130	1,750	130	0.5	0.5
MTBE	4,400	13	13	--	0.5
Metals					
Arsenic	36	10	10	2	1
Cadmium	9.3	5	5	1	1
Chromium	50	50	50	2	1
Copper	2.9	1,000	2.9	2	1
Lead	5.6	15	5.6	1	1
Nickel	7.1	100	7.1	2	1
Zinc	58	5,000	58	2	10
PAHs					
Anthracene	--	770	770	10	0.5
Benzo(a)anthracene	--	0.1	0.1	10	0.1
Benzo(a)pyrene	--	0.2	0.2	10	0.1
Benzo(b)fluoranthene	--	0.2	0.2	10	0.2
Benzo(g,h,i)perylene	--	150	150	10	0.2
Benzo(k)fluoranthene	--	2	2	10	0.1
Chrysene	--	20	20	10	0.1
Dibenz (a,h) anthracene	--	--	--	10	0.2
Fluoranthene	--	300	300	10	0.4
Fluorene	--	300	300	10	1
Indeno(1,2,3-cd)pyrene	--	--	--	10	0.14
Naphthalene	--	300	300	10	5
Phenanthrene	--	230	230	10	0.5
Pyrene	--	230	230	10	0.2

Notes

[1] Cleanup levels for salt water protection are based on Table 6 in Order No. R2-2003-0080 Site Cleanup Requirements, Presidio of San Francisco (RWQCB, 2003) and Table 7-6 of the Cleanup Levels Document (EKI, 2002).

[2] Cleanup level listed is a promulgated or proposed federal Maximum Contaimnant Level (MCL), or promulgated or proposed MCL or action level specific to the State of California. MCLs obtained from U.S. EPA Region IX, Drinking Water Standards and Health Advisories Tables, dated February 2000. Drinking water cleanup levels apply to groundwater and surface water at the Presidio.

[3] Cleanup levels for groundwater and Crissy Field Tidal Marsh seeps are based on the most stringent of the values for maintaining water quality criteria for salt water and drinking water. Source: Table 7-6 in the Cleanup Levels Document (EKI, 2002).

[4] Cleanup Levels from *Fuel Product Action Level Development Report, Presidio of San Francisco, California* (FPALDR) (Montgomery Watson, 1995c) and represent Practical Quantitation Limits.

[5] TPH as fuel oil uses a motor oil standard for carbon range C_{24}-C_{36}.

Shading indicates target cleanup level.
MTBE - Methyl tert-butyl ether
PAHs - Polycyclic aromatic hydrocarbons
TPH - Total petroleum hydrocarbons
µg/L - micrograms per liter
-- - No cleanup level available.

Table 5
Soil Remedial Units
Commissary/PX Study Area
Presidio of San Francisco, California

Soil Remedial Units	Estimated Total Volume Accessible (cubic yards)	Estimated Total Volume Less Accessible (cubic yards)	COCs		Depth		Soil Access		Surface Cover	
			TPH	PAHs	0 to 3 feet	3 to 10 feet	Accessible	Less Accessible[1]	Slab / Paved	Grass
Site 15	2,057	--	g,d,fo	X	d, fo, PAHs	g, d, fo, PAHs	X		X	
FDS Pipeline Area	1,449	--	d, fo	X	d, fo, PAHs	fo, PAHs	X		X	
Pipeline A Area 1	404	--	g, fo	X	g, fo, PAHs	fo	X			X
Pipeline A Area 2	510	--	fo	X	fo, PAHs	PAHs	X			X
Building 613 Area	2,097	--	g, d, fo	X	fo, PAHs	g, d, fo, PAHs	X		X	X
TPHg Source Area	3,180	--	g, fo	X	fo, PAHs	g, fo, PAHs	X		X	
Building 619 Area	--	583	fo			fo		X[2]	X	
Building 628 Area 1	295	113	g, d, fo		g, d, fo	fo	X	X[2]	X	X
Building 628 Area 2	175	--	d, fo	X	d, fo, PAHs	fo	X		X	
Building 626 Area	681	677	g, d, fo	X	g, d, fo, PAHs	d, fo, PAHs	X	X[2]	X	X
Pipeline C Area	222	--	d, fo	X	PAHs	d	X		X	
LTTD Area	430	--		X	PAHs	PAHs	X		X	
FDS Pipeline Residual Area 1	140		g, d, fo, BTEX		g, d, fo, BTEX		X			X
FDS Pipeline Residual Area 2	140		fo		fo		X		X	
FDS Pipeline Residual Area 3 and AST 634 Area	873		g, d, fo		g, d, fo		X			X
TOTAL	**12,652**	**1,373**								

Notes
[1] Soil in "Less Accessible" areas lie under existing building slab.
[2] Underlies Building 610, the Former Commissary, currently occupied by retail facility.
AST - above ground storage tank
BTEX - benzene, toluene, ethylbenzene, and xylenes
COCs - Contaminants of Concern
d - TPH as diesel fuel
FDS - Fuel Distribution System
fo - TPH as fuel oil
g - TPH as gasoline
LTTD - Low temperature thermal desorption
PAHs - Polycyclic aromatic hydrocarbons
TPH - Total petroleum hydrocarbons (as gasoline, as diesel fuel, and as fuel oil)

Table 6
Screening of *In Situ* Soil Technologies
Commissary/PX Study Area
Presidio of San Francisco, California

Technology	Description	Effectiveness @ Commissary/PX[1]	Screening
Bioremediation			
Biosparging[2]	▪ Utilizes indigenous microorganisms to biodegrade organic constituents in the saturated zone. ▪ Used to reduce concentrations of petroleum constituents that are dissolved in groundwater, adsorbed to soil below the water table, and within the capillary fringe.	▪ Primarily addresses groundwater and saturated soil contamination; "excess" air rises into the unsaturated zone soil for additional remediation. ▪ Method is appropriate to remediate saturated zone soil contamination at Commissary/PX Study Area. Purpose is to target smear zone.	▪ Effective: Yes (Moderate – High). ▪ Implementable: Yes. ▪ Cost: Moderate to High. ▪ *Technology is **retained** for further evaluation in alternatives.*
Bioventing[2]	▪ Utilizes indigenous microorganisms to biodegrade organic constituents absorbed to soils in the unsaturated zone. Air injection wells are installed by standard well-drilling methods (vertical, angled, or horizontal). ▪ The increased supply of oxygen (as air) serves to accelerate the rate of naturally occurring aerobic contaminant biodegradation.	▪ Method is appropriate to remediate soil contamination at Commissary/PX Study Area. ▪ Low-profile, low-tech equipment. ▪ Pavement/building "cap" assists in lateral spreading of injected air. ▪ Effective at degrading TPH and PAHs; will continue to degrade even low concentrations of COCs. ▪ Implementable with minimal disturbance to building occupants. ▪ Does not require handling of chemicals. ▪ Can be monitored (soil gas sampling) during system operation, prior to confirmation (soil) sampling.	▪ Effective: Yes (High)[3]. ▪ Implementable: Yes; may have some challenges with horizontal drilling beneath building, due to closely spaced foundation piles. ▪ Cost: Moderate to High. ▪ *Technology is **retained** for further evaluation in alternatives.*

[1] Site-specific considerations include: widely-varying soil permeabilities (1.71×10^{-2} to 3.6×10^{-7} cm/s); relatively low contaminant concentrations; relatively high carbon content (up to 50,000 mg/kg TOC); accessibility; asphalt pavement or building "cap" across most of the site; building occupancy and use; nature of contaminants (PAHs and heavy TPH); absence of detected impacts to groundwater; and shallow groundwater table.
[2] EPA, 2004. Website: *CLU-IN – Bioventing/Biosparging*: http://www.clu-in.org/techfocus; Accessed 7/23/04.
[3] If a technology has the potential to be effective at the Commissary/PX Site, it's anticipated degree of effectiveness (Moderate vs. High) is a function of the technology's ability to reduce the COCs to the prescribed Cleanup Levels and the required precision needed to affect all the contamination present in an RU.

Table 6
Screening of *In Situ* Soil Technologies
Commissary/PX Study Area
Presidio of San Francisco, California

Technology	Description	Effectiveness @ Commissary/PX[1]	Screening
Enhanced Bioremediation[4] (ORC™)	▪ Uses oxygen-releasing product to time-release oxygen into the subsurface via soil borings. The increased supply of oxygen serves to accelerate the rate of naturally occurring aerobic contaminant biodegradation.	▪ Method is appropriate to remediate soil contamination at Commissary/PX Study Area. ▪ Uses standard drilling equipment. ▪ Effective at degrading TPH and PAHs; yields diminishing results with lower COC concentrations. ▪ Relies on chemical injection under pressure to obtain adequate distribution in the subsurface.	▪ Effective: Yes (Moderate). ▪ Implementable: Yes. ▪ Cost: Moderate to High. ▪ *Technology is **retained** for further evaluation in alternatives.*
Sparging & Extraction			
Air Sparging[5]	▪ Strategically placed air injection wells are positioned in the saturated and unsaturated zones and connected to a blower, which supplies compressed air to the subsurface zone of impact. ▪ Air bubbles from sparging well volatilize contaminants in the saturated zone. ▪ Vapor extraction system (SVE) removes sparged contaminants from the unsaturated zone.	▪ Method is not appropriate for Commissary/PX Study Area due to absence of lighter (more volatile) petroleum products. ▪ Primarily addresses contamination in the saturated zone; may contribute to unsaturated zone soil remediation.	▪ Effective: No. ▪ *Technology is **not retained** for further evaluation in alternatives.*

4 Regenesis, 2003. *Oxygen Release Compound Overview*. October 10.
5 EPA, 2004. Website: *CLU-IN – Air Sparging*: http://www.clu-in.org/techfocus; Accessed 7/23/04.

Table 6
Screening of *In Situ* Soil Technologies
Commissary/PX Study Area
Presidio of San Francisco, California

Technology	Description	Effectiveness @ Commissary/PX[1]	Screening
Ozone Sparging[6] ~~(Perozone™ System)~~	▪ A chemical oxidation system that is applied by injecting peroxide-coated ozone microbubbles into the saturated zone. Ozone serves as a chemical oxidant to degrade contaminants. Appropriate for contamination in both the saturated and unsaturated zones.	▪ Method is appropriate to remediate soil contamination at Commissary/PX Study Area. However, remedial system (i.e., equipment, piping, injection points) would remain in place for a period of time (months) until effectiveness is achieved, whereas other technologies require only a brief application period (days).	▪ Effective: Yes (Moderate). ▪ Implementable: Yes. ▪ Cost: High. ▪ *Technology is **retained** for further evaluation in alternatives.*
Soil Vapor Extraction[7] (SVE)	▪ Volatile constituents absorbed to soils in unsaturated zone are volatilized by applying a vacuum. Resulting vapors are extracted for treatment.	▪ Method is not appropriate for Commissary/PX Study Area due to absence of lighter (more volatile) petroleum products; method is not effective for heavier TPH fractions. ▪ Presence of shallow groundwater table could result in mounding and lateral spreading of contaminants.	▪ Effective: No. ▪ *Technology is **not retained** for further evaluation in alternatives.*
Chemical Oxidation			
Hydrogen Peroxide[8]	▪ A process using hydrogen peroxide and a chelated iron catalyst to produce hydroperoxide anion and super oxide hydrogen peroxide. Due to highly reactive nature of mixture peroxide and catalyst are injected in two separate phases.	▪ Method may be appropriate to remediate soil contamination at Commissary/PX Study Area. ▪ Requires specialized equipment. ▪ Effective at degrading TPH and PAHs; yields diminishing results with lower COC concentrations.	▪ Effective: Yes (Moderate). ▪ Implementable: Yes; may be problematic due to soil sterilization and if breakthrough and heave is excessive. ▪ Cost: High.

[6] KVA, 2004. *Perozone™ Chemical Oxidation System*: http://www.kva-equipment.com; Accessed 7/23/04.
[7] EPA, 2004. Website: *CLU-IN – Soil Vapor Extraction:* http://www.clu-in.org/techfocus; Accessed 7/23/04.
[8] Brown, 2003. *In Situ Chemical Oxidation: Performance, Practice, and Pitfalls*; paper presented at Air Force Center for Environmental Excellence (AFCEE) Technology Transfer Workshop, 25 February.

Table 6
Screening of *In Situ* Soil Technologies
Commissary/PX Study Area
Presidio of San Francisco, California

Technology	Description	Effectiveness @ Commissary/PX[1]	Screening
	▪ Reacts with the carbon in the soil making biodegradation no longer possible. ▪ Due to the exothermic nature of the reaction, high concentrations of reagent can result in violent subsurface reactions, sometimes adversely affecting pavement and buildings. ▪ Specialized equipment is required for the application of this reagent to the subsurface (e.g., stainless steel components, high-pressure equipment).	▪ Relies on chemical injection under pressure to obtain adequate distribution in the subsurface. ▪ Near-instantaneous reaction; chemical does not persist in the environment for continued remediation. ▪ High-carbon (TOC) soils increase quantity of reagent required to affect remediation. ▪ Violent reaction may damage pavement, underground utilities, or building foundations.	▪ *Technology is **not retained** for further evaluation in alternatives.*
Sodium Persulfate[9]	▪ A process using sodium persulfate with an iron catalyst to produce sulfate radicals which are more stable than hydroxyl radicals. Persulfate and catalyst are mixed in a tank and injected into the subsurface in a single phase. ▪ Applied using conventional (e.g., direct-push) drilling technology.	▪ Method is appropriate to remediate soil contamination at Commissary/PX Study Area. ▪ Effective at degrading TPH and PAHs; yields diminishing results with lower COC concentrations. ▪ Relies on chemical injection under pressure for initial distribution in the subsurface. ▪ Relatively slower reaction; does not react with soil carbon; chemical persists in the environment for continued remediation. ▪ Slower reaction poses less risk to pavement, underground utilities, or building foundations.	▪ Effective: Yes (Moderate – High) ▪ Implementable: Yes. ▪ Cost: High. ▪ *Technology is **retained** for further evaluation in alternatives.*

Table 7a
Evaluation of Alternatives Summary
Accessible Areas
Commissary/PX Study Area
Presidio of San Francisco, California

Alternative 1	Alternative 2	Alternative 4
No Action for Soil and Groundwater (Including Abandonment of Groundwater Monitoring Wells)	**Capping Soil with Land Use Controls and Groundwater Monitoring**	**Soil Excavation and Off-site Disposal**
Objective The objective of this alternative is to provide no additional control or protection to human health or the environment for contamination that exists in the soil at the Commissary/PX.	The objective of this alternative is to maintain existing asphalt and concrete cover over the site soil remedial units (RUs) and place soil caps[1] over uncovered RUs to isolate the contaminated soil from human exposure and to monitor groundwater for potential impacts due to soil contamination.	The objective of this alternative is to remove soil contamination and dispose of waste materials off-site at a permitted recycling and/or disposal facility, as appropriate.
CAP CRITERIA		
1) Technical Effectiveness This alternative will not be able to address the area or volumes of impacted soil requiring remediation. There will be no impacts to human health and the environment during implementation. There are no long-term technical reliability issues.	This alternative is able to address the entire area and volume of impacted soil requiring remediation. Potential adverse impacts to human health and the environment during implementation can be readily mitigated using standard construction practices (e.g., dust control during excavation). The long-term reliability of capping is acceptable with respect to the types of chemicals at this site, provided the cap is properly constructed and maintained.	This alternative is able to address the entire area and volume of impacted soil requiring remediation. Potential adverse impacts to human health and the environment during implementation can be readily mitigated using standard construction practices (e.g., dust control during excavation). Excavation and off-site disposal has a proven history with respect to the types of chemicals at this site.
2) Implementability This alternative is unlikely to obtain approvals from regulatory agencies. This technology does not require any treatment, storage, and disposal facilities (TSDFs). The equipment, materials, and skilled workers for the abandonment of monitoring wells are readily available.	This alternative may obtain approvals from regulatory agencies. Appropriate TSDFs for off-site disposal of excavated soil are available. The equipment, materials, and skilled workers for excavation and off-site disposal of impacted soil and capping of the site are readily available.	This alternative would obtain approvals from regulatory agencies. Appropriate TSDFs for off-site disposal of excavated soil are available. The equipment, materials, and skilled workers for excavation and off-site disposal of impacted soil are readily available.

Table 7a
Evaluation of Alternatives Summary
Accessible Areas
Commissary/PX Study Area
Presidio of San Francisco, California

Alternative 1	Alternative 2	Alternative 4
3) Cost-Effectiveness		
This alternative, implemented for both Less Accessible RUs and Accessible RUs, is estimated to cost $65,000. Although relatively low-cost, this remedy provides very little protection to human health and the environment.	This alternative, implemented for both Less Accessible RUs and Accessible RUs, is estimated to cost $1,886,000. This alternative is lower in cost but does not provide the same level of protection to human health and the environment as Alternative 4.	This alternative, implemented for only the Accessible RUs, is estimated to cost $2,076,000. This alternative provides a greater level of protection to human health and the environment than Alternative 2.
SUMMARY OF EVALUATION CRITERIA		
Alternative is Not Recommended. COC concentrations in soil may be greater than applicable cleanup levels and may pose unacceptable risks to human health and the environment.	**Alternative is Not Recommended.** Alternative is likely to be protective of human health and the environment and acceptable to RWQCB and DTSC. However, this alternative will require land use controls, long-term O&M of the cover, and long-term groundwater monitoring to protect potential receptors from exposure to COCs above applicable cleanup levels and has a higher associated cost.	**Alternative is Recommended as the Preferred Remedy for Accessible Soil RUs.** This alternative would provide a permanent solution, by removing COCs from soil at a lower cost than capping and monitoring when combined with the Preferred Remedy for Less Accessible RUs.

[1] A one-foot thick soil cap will be placed in the landscaped areas after a one-foot thick layer of soil has been excavated. The excavated soil will be disposed of off-site at a permitted disposal facility.

Table 7b
Evaluation of Alternatives Summary
Less Accessible Areas
Commissary/PX Study Area
Presidio of San Francisco, California

Alternative 1	**Alternative 2**	**Alternative 3**	**Alternative 4**	**Alternative 4**
No Action for Soil and Groundwater **(Including Abandonment of Groundwater Monitoring Wells)**	**Capping Soil with Institutional Controls and Groundwater Monitoring**	**In Situ Soil Remediation:** • **Oxygen Release Product Injection** • **Bioventing and Biosparging** • **Ozone Sparging** • **Sodium Persulfate Injection**	**Soil Excavation and Off-site Disposal with Building 610**	**Soil Excavation and Off-site Disposal following Building 610 Demolition**
Objective The objective of this alternative is to provide no additional control or protection to human health or the environment for contamination that exists in the soil at the Commissary/PX.	The objective of this alternative would be to maintain existing cover (Building 610) over the site soil remedial units (RUs) to isolate the contaminated soil from human exposure and to monitor groundwater for potential impacts due to soil contamination.	The objective of this alternative is to add oxygen to the soil to promote bioremediation or to add oxidizing chemicals to react with the contaminants. The bioremediation or oxidation will decrease soil contamination below cleanup levels.	The objective of this alternative is to remove soil contamination and dispose of waste materials off-site at a permitted recycling and/or disposal facility, as appropriate.	The objective of this alternative is to remove fill and shallow soil contamination and dispose of waste materials off-site at a permitted recycling and/or disposal facility, as appropriate.
CAP CRITERIA				
1) Technical Effectiveness This alternative will not be able to address the area or volumes of impacted soil requiring remediation. There will be no impacts to human health and the environment during implementation. There are no long-term technical reliability issues.	This alternative is able to address the entire area and volume of impacted soil requiring remediation. Potential adverse impacts to human health and the environment during implementation can be readily mitigated using standard construction practices (e.g., dust	This alternative is able to address the entire area and volume of impacted soil requiring remediation, although multiple applications or longer operating periods may be required than initially estimated. Potential adverse impacts to human health and the environment	This alternative is able to address the entire area and volume of impacted soil requiring remediation. Potential adverse impacts to human health and the environment during implementation can be readily mitigated using standard construction practices (e.g., dust control	This alternative is able to address the entire area and volume of impacted soil requiring remediation. Potential adverse impacts to human health and the environment during implementation can be readily mitigated using standard construction practices (e.g., dust control

Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 4
	control during excavation). The long-term reliability of capping is acceptable with respect to the types of chemicals at this site, provided the cap is properly constructed and maintained.	during implementation can be readily mitigated (e.g., wearing personal protective equipment [PPE]). The long-term reliability of the in-situ treatment technologies is excellent with respect to the types of chemicals at this site, as treatment is a permanent solution, provided all the contamination can be reached during treatment.	during excavation). Excavation and off-site disposal has a proven history with respect to the types of chemicals at this site.	during excavation). Excavation and off-site disposal has a proven history with respect to the types of chemicals at this site.
2) Implementability This alternative is unlikely to obtain approvals from regulatory agencies. This technology does not require any treatment, storage, and disposal facilities (TSDFs). The equipment, materials, and skilled workers for the abandonment of monitoring wells are readily available.	This alternative may obtain approvals from regulatory agencies. Appropriate TSDFs for off-site disposal of excavated soil are available. The equipment, materials, and skilled workers for excavation and off-site disposal of impacted soil and capping of the site are readily available.	This alternative will likely obtain approvals from regulatory agencies. This alternative does not require the use of TSDFs. The equipment, materials, and skilled workers for implementation of in situ treatment technologies are readily available, although longer lead times may be required for some technologies.	This alternative would obtain approvals from regulatory agencies. Appropriate TSDFs for off-site disposal of excavated soil are available. The equipment, materials, and skilled workers for excavation and off-site disposal of impacted soil are readily available. Implementation is more difficult with Building 610 in place than it would be following demolition of Building 610.	This alternative would obtain approvals from regulatory agencies. Appropriate TSDFs for off-site disposal of excavated soil are available. The equipment, materials, and skilled workers for excavation and off-site disposal of impacted soil are readily available.
3) Cost-Effectiveness This alternative, implemented for both Less Accessible RUs and Accessible RUs, is estimated to cost $65,000. Although	This alternative, implemented for both Less Accessible RUs and Accessible RUs, is	The cost for this alternative, implemented for only the Less Accessible RUs, is	This alternative, implemented for only the Less Accessible RUs, is estimated to cost $708,000. Although	This alternative, implemented for only the Less Accessible RUs, is estimated to cost $365,000. Even though it is

Table 7b
Evaluation of Alternatives Summary
Less Accessible Areas
Commissary/PX Study Area
Presidio of San Francisco, California

Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 4
relatively low-cost, this remedy provides very little protection to human health and the environment.	estimated to cost $1,886,000. Although lower in cost, this remedy does not provide the same level of protection to human health and the environment as Alternatives 3 or 4.	estimated to range between $424,000 and $647,000. Relatively moderate in cost, this remedy provides a greater level of protection to human health and the environment than Alternative 2, but does not provide the degree of certainty of Alternative 4.	relatively higher in cost, this remedy provides a greater level of protection to human health and the environment than Alternative 2 and provides a greater degree of certainty than Alternative 3.	relatively lower in cost, this remedy provides a greater level of protection to human health and the environment than Alternative 2 and provides a greater degree of certainty than Alternative 3.
SUMMARY OF EVALUATION CRITERIA				
Alternative is Not Recommended. COC concentrations in soil are greater than applicable cleanup levels and may pose unacceptable risks to human health and environment.	**Alternative is Not Recommended.** Alternative is likely to be protective of human health and the environment and acceptable to RWQCB and DTSC but may not be preferred by the RAB and community members. This alternative will require land use controls. Long-term monitoring and maintenance of the cover to protect potential receptors from exposure to COCs above applicable cleanup levels and groundwater monitoring is required.	**Alternative is Recommended as the Preferred Remedy if Builsing 610 is not Demolished within Five Years of the Final Date of this CAP.** This alternative would provide a permanent solution and remove COCs from soil and is potentially the most cost effective, if Building 610 is not demolished.	**Alternative is Not Preferred Remedy.** This alternative would remove COCs from soil, but is not cost-effective.	**Alternative is Preferred Remedy if Building 610 is Demolished Within Five Years of the Final Date of this CAP.** This alternative would remove COCs from soil and would cost less than in situ treatment (Alternative 3).

Table 8
Summary of Estimated Costs for Corrective Action Alternatives
Commissary/PX Study Area
Presidio of San Francisco, California

Alternative		Capital Cost[1]		Annual O&M Cost[1]		O&M Period (years)		Total Cost[2] (NPV[3])	
Accessible RUs	**Less Accessible RUs**	**Accessible**	**Less Accessible**	**Accessible**	**Less Accessible**	**Accessible**	**Less Accessible**	**Accessible**	**Less Accessible**
1) No Action[4]		$65,000		$ --		--		**$65,000**	
2) Capping with Institutional Controls[5]		$480,000		$169,000		10		**$1,886,000**	
	3) In Situ Soil Remediation[6]								
	? Oxygen Release Product Injection		$295,000		$7,000		30		**$424,000**
	? Bioventing and Biosparging		$518,000		$7,000		30		**$647,000**
	? Ozone Sparging		$486,000		$7,000		30		**$615,000**
	? Sodium Persulfate Injection		$367,000		$7,000		30		**$496,000**
4) Excavation and Off-Site Disposal with Groundwater Monitoring[7]		$1,692,000		$85,000		5		**$2,076,000**	
	4) Excavation and Off-Site Disposal								
	? With Building 610		$708,000		$ --		--		**$708,000**
	? Without Building 610[8]		$360,000		$1,000		5		**$365,000**
Combined Cost of Preferred Alternative for Accessible RUs (Alternative 4) and Less Accessible RUs (Alternative 3)[9]:								**$2.5 - 2.7 million**	

Notes
* Preferred Alternative
1 Detailed cost estimates for capital and annual O&M costs are presented in Appendix D, Tables D-1 through D-10.
2 Total Cost is calculated using a 3.5 percent interest rate per OSWER guidance (EPA, 2000b) and Federal guidelines (EPA, 2000a).
3 NPV = Net Present Value
4 Alternative includes groundwater monitoring well abandonment.
5 Alternative includes groundwater monitoring across the entire Commissary/PX Study Area for 10 years.
6 Alternative does not include groundwater monitoring; monitoring is included under the alternatives for the Accessible RUs (for which Alternative 4 is the preferred alternative); alternative includes land use controls for 30 years.
7 Alternative includes quarterly seeps and groundwater monitoring in the immediate vicinity of Building 610 for 5 years until Less Accessible corrective action is implemented..
8 Alternative includes interim land use controls for five years.
9 If Building 610 is demolished, preferred alternative for Less Accessible RUs is Alternative 4 - Excavation and Off-Site Disposal, and combined cost of preferred alternative would be $2.4 million.

Table 9
Groundwater and Surface Water Monitoring Program for Commissary Seeps Groundwater Remedial Unit
Commissary/PX Study Area
Presidio of San Francisco, California

Location ID	**New or Existing Sampling Location**	**Sampling Method**	**Monitoring Location Rationale**	**Analytical Requirements**						
				Dissolved Arsenic	Dissolved Iron	Dissolved Sulfide / Sulfate	Total Petroleum Hydrocarbons[1]	Dissolved Oxygen[2]	Oxidation Reduction Potential[1]	Temperature[2]
				EPA 6010/6020 and 160.1	SMMW 3500 / EPA 6010/6020 and 160.1	EPA 300.0 / 376.2	EPA 8015/ EPA 3630A	(field probe)	(field probe)	(field probe)
610GW101	Existing	Low Flow	Monitor groundwater level and chemistry upgradient of Commissary Seeps Interim Source Removal Action.	Q	Q	Q	Q	Q	Q	Q
610GW102	Existing	Low Flow	Monitor groundwater level and chemistry within the Commissary Seeps Interim Source Removal Action.	Q	Q	Q	Q	Q	Q	Q
610GW103	Existing	Low Flow	Monitor groundwater level and chemistry downgradient of Commissary Seeps Interim Source Removal Action.	Q	Q	Q	Q	Q	Q	Q
600GW101	Existing	Low Flow	Monitor groundwater level and chemistry upgradient of Building 610.	Q	Q	Q	Q	Q	Q	Q
600GW105	Existing	Low Flow	Monitor groundwater level and chemistry downgradient of Building 610.	Q	Q	Q	Q	Q	Q	Q
600GW106	Existing	Low Flow	Monitor groundwater level and chemistry upgradient of Building 610.	Q	Q	Q	Q	Q	Q	Q
610SP01	Existing with basin to collect sample	Surface	Monitor surface water chemistry downgradient of Commissary Seeps Interim Removal Action.	Q	Q	Q	Q	Q	Q	Q
610SP02	Existing with basin to collect sample	Surface	Monitor surface water chemistry downgradient of Commissary Seeps Interim Removal Action.	Q	Q	Q	Q	Q	Q	Q

Notes

Q = Quaterly sampling. Groundwater levels will be measured and seep flows will be estimated at the time of sampling.

[1] Samples will be analyzed for Total Petroleum Hydrocarbons as gasoline (TPHg), diesel (TPHd), and fuel oil (TPHfo), with respective carbon ranges of C_7 - C_{12}, C_{12} - C_{24}, and C_{24} - C_{36}, by EPA Method 8015M with silica gel cleanup by EPA Method 3630A.

[2] Dissolved Oxygen (DO), Oxidation Reduction Potential (ORP), and temperature will be recorded on field sampling logs immediately before sample collection.

[3] Seeps will be sampled for both total and dissolved arsenic.

NA = Not Applicable

FIGURES

N

DRAFT

1000 0 1000 Feet

COMMISSARY/PX SITE LOCATION MAP

Treadwell&Rollo

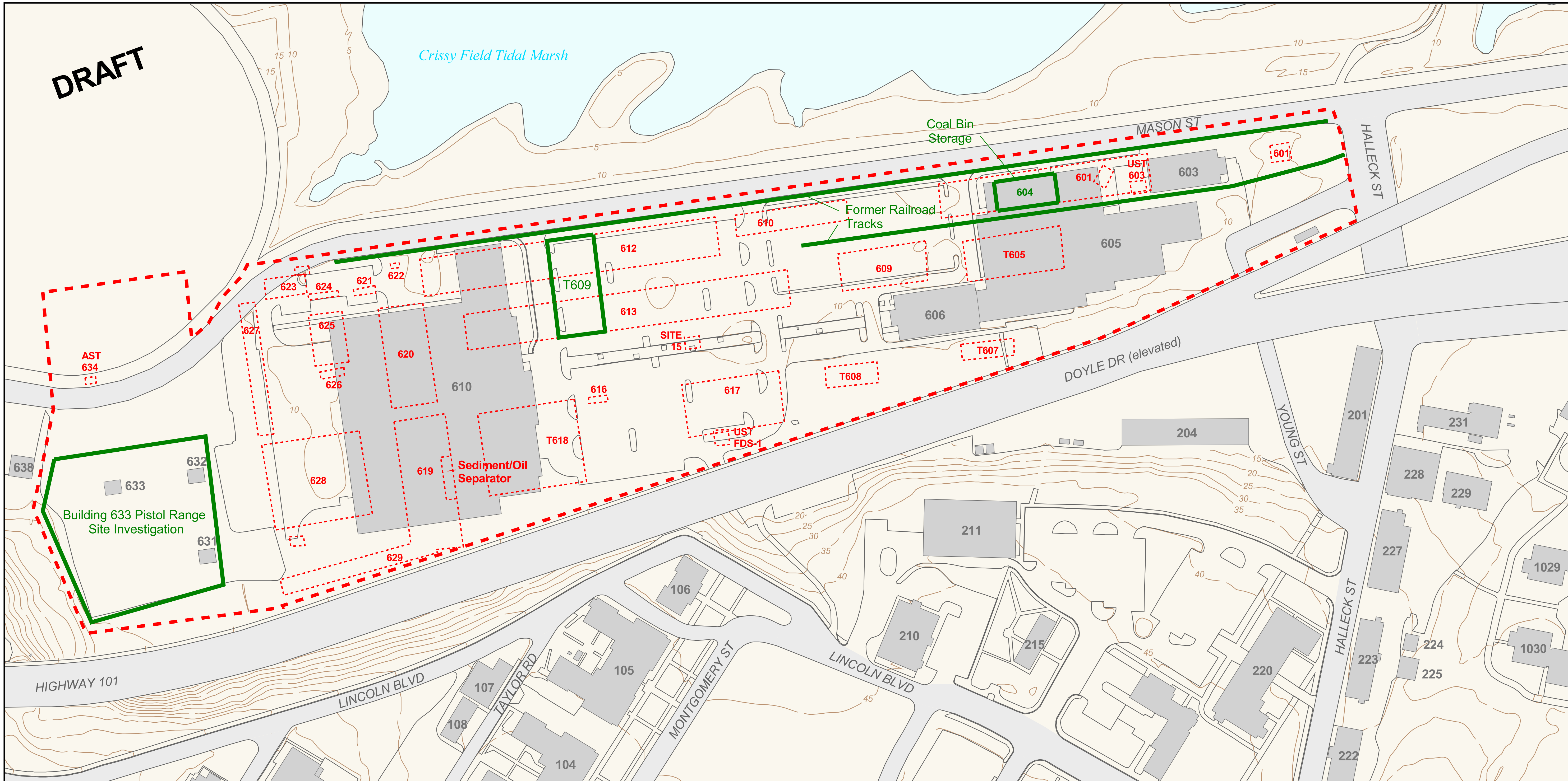
THE PRESIDIO TRUST

Presidio Trust
34 Graham Street
P.O. Box 29052
San Francisco, CA
94129-0052
415/561-5300
fax 561-5315

July 2004

FIGURE 1

Treadwell & Rollo 2893_11\COMMISSARYREG_DRAFT_CAP_072404.APR 07/2004



LEGEND

Selected Remedial Action for these Sites to be Presented in "Remedial Action Plan, Baker Beach Disturbed Areas 1, 1A, 2, and 2A and Twenty-Seven Other Sites, Presidio of San Francisco, California" MACTEC, 2004.

Study Area Boundary

5 Topographic Contour (Contour Interval : 5 Feet)

629 Former Motor Pool Structure and Identification Number

610 Existing Structure and Identification Number

Notes:
Horizontal Datum: NAD 27, CA State Plane Coordinates, Zone 3, feet

Vertical Datum (topography): North American Vertical Datum, NAVD88, feet

N

150 0 150 Feet

COMMISSARY/PX STUDY AREA

Treadwell&Rollo

THE PRESIDIO TRUST

Presidio Trust
34 Graham Street
P.O. Box 29052
San Francisco, CA
94129-0052
415/561-5300
fax 415/561-5315
July 2004

FIGURE 2

Treadwell & Rollo 2893_11\COMMISSARY\REG_DRAFT_CAP_072404.APR 07/2004

Treadwell & Rollo 2893_11\COMMISSARY\CommPX_CAP_FIG3.APR 07/2004

LEGEND

- Groundwater Monitoring Well Location
- Surface Water Seep Location
- Former A2 Zone Bioassay Study Micro Well
  Source: IT, 1997. Report of Petroleum Hydrocarbon Bioassay and Point of Compliance Concentration Determinations, Salt Water Ecological Protection Zone, Presidio of San Francisco, California. December.
- Former A1 Zone Bioassay Study Micro Well
  Source: IT, 1997. Report of Petroleum Hydrocarbon Bioassay and Point of Compliance Concentration Determinations, Salt Water Ecological Protection Zone, Presidio of San Francisco, California. December.
- Historical Sample Location
- Commissary/PX Study Area Boundary
- Building 637 Site Investigation Area
- Buildings 207/231 Petroleum Site Investigation Area
- FDS Removal
- Building 633 Pistol Range Site Investigation *
- UST FDS-1 Removal
- Commissary Seeps Interim Source Removal Action
- Contigency Site 171199-1100 (Approximate Location)
  Source: Trust, 1999a, Letter regarding Crissy Field Area Contingency Plan Site 171199-1100: Seeps in Southwest Corner of the Tidal Marsh, Commissary Area, Area A, Presidio of San Francisco. 19 November.
- Commissary Construction Waste Oil Tank Removal (approximate)
  Source: Dames & Moore, 1997. Final Remedial Investigation Report, Presidio Main Installation, Presidio of San Francisco. January.
- UST 603 Removal
- Removed FDS Line and/or Conveyance Line
- Former Railroad *
- Former Storm Drain
- Known or Suspected Fuel Distribution Pipeline
- Topographic Contour (Contour Interval : 5 Feet)
- FDS Test Pit
  Source: Montgomery Watson, 1999a. Additional Investigation of Fuel Distribution Systems, Presidio of San Francisco, California. July.
- LTTD Pretreatment Soil Sampling Investigation
  Source: Montgomery Watson, 1996a. LTTD Pretreatment Baseline Soil Sampling at Motor Pool Area. May.
- Contigency Site 111098-1100 (Approximate Location)
  Source: Golden Gate National Park Association, 1998, Form 1, Soil Observation Field Report Form 10 November.
- Former Fuel Dispensing ans Storage Features
- Former Grease Racks, Wash Racks, Waste Oil Tanks, Oil/Water Separators
- Refer to Inset Map for enlarged area
- Former Coal Bin Storage *
- Former Motor Pool Shops
- 609 Former Motor Pool Structures
- 605 Existing Building and Number

Notes:
* Selected Remedial Action for these Sites to be Presented in "Remedial Action Plan, Baker Beach Disturbed Areas 1, 1A, 2, and 2A and Twenty-Seven Other Sites, Presidio of San Francisco, California" MACTEC, 2004.

For additional previous investigation specific information refer to Table 2.

Elevations based on feet above mean sea level.

Horizontal Datum: NAD 27, CA State Plane Coordinates, Zone 3, feet

Vertical Datum (topography): North American Vertical Datum, NAVD88, feet

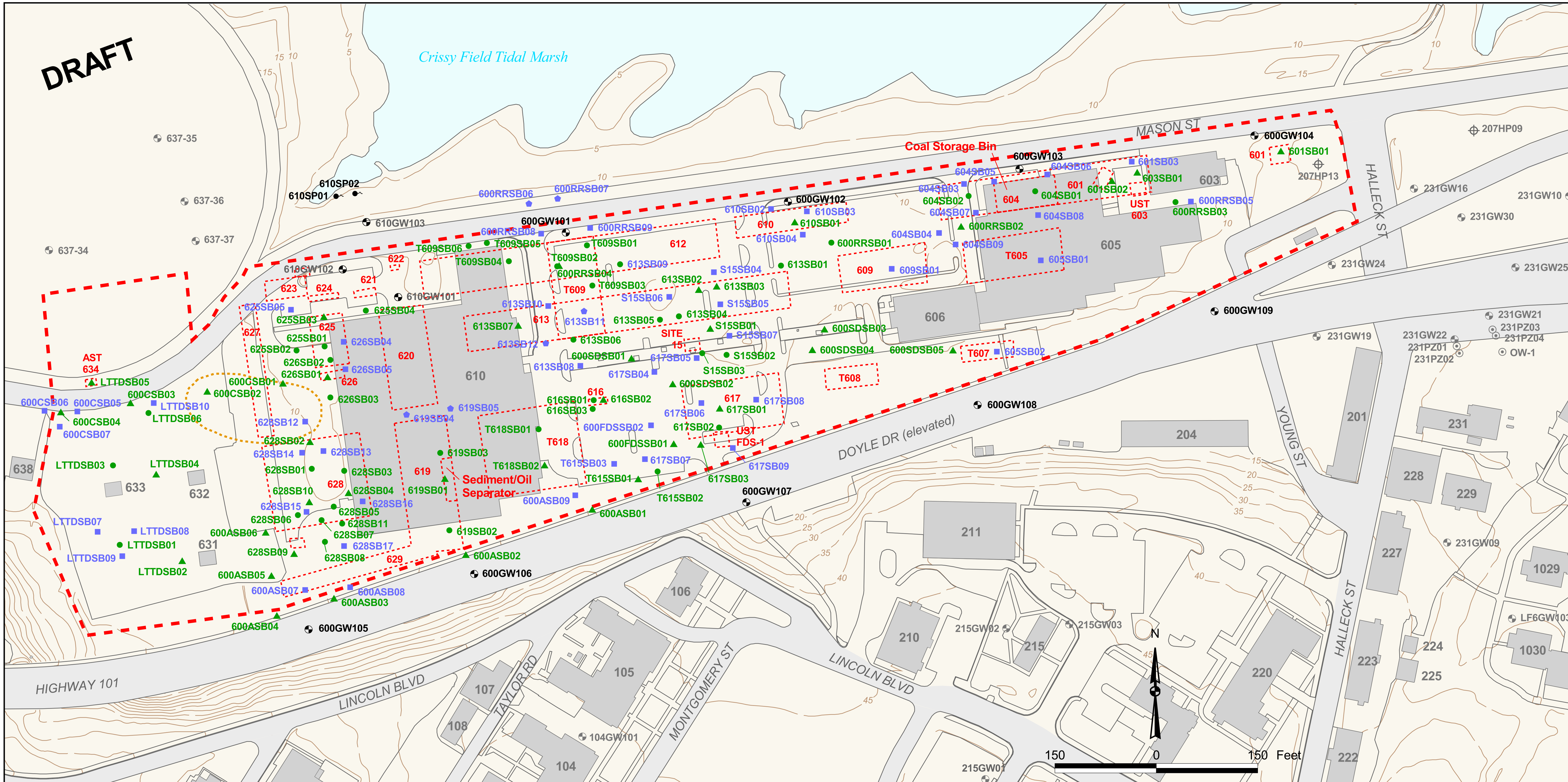
PREVIOUS INVESTIGATION AND REMOVAL ACTION AREAS

Treadwell&Rollo

THE PRESIDIO TRUST

Presidio Trust
34 Graham Street
P.O. Box 29052
San Francisco, CA
94129-0052
415/561-5300
fax 415/561-5315
July 2004

FIGURE 3



LEGEND

- ● LTTDSB01 Phase 1 - Soil Sample Location
- ▲ 600ASB01 Phase 1 - Soil and Groundwater Grab Sample Location
- ■ LTTDSB07 Phase 2 - Soil Sample Location
- ⬟ 619SB04 Phase 2 - Soil and Groundwater Grab Sample Location
- 610SP01 Seep Sample Location
- 600GW105 Groundwater Monitoring Well Location
- 637-35 Adjacent Study Area Shallow Groundwater Monitoring Well
- 231PZ01 Adjacent Study Area Shallow Piezometer
- 207HP09 CPT Boring (Approximate Location) Source: Draft Final Building 207/231 Correction Action Plan, Montgomery Watson, August 1999b
- Study Area Boundary
- 5 Topographic Contour (Contour Interval : 5 Feet)
- Presidio Base Map
- Proposed SFr-6 Boundary (Archaeologically Sensitive Area)
- 629 Former Motor Pool Structure and Identification Number
- 610 Existing Structure and Identification Number

Notes:
Horizontal Datum: NAD 27, CA State Plane Coordinates, Zone 3, feet

Vertical Datum: North American Vertical Datum, NAVD88, feet

SITE INVESTIGATION SAMPLING LOCATIONS

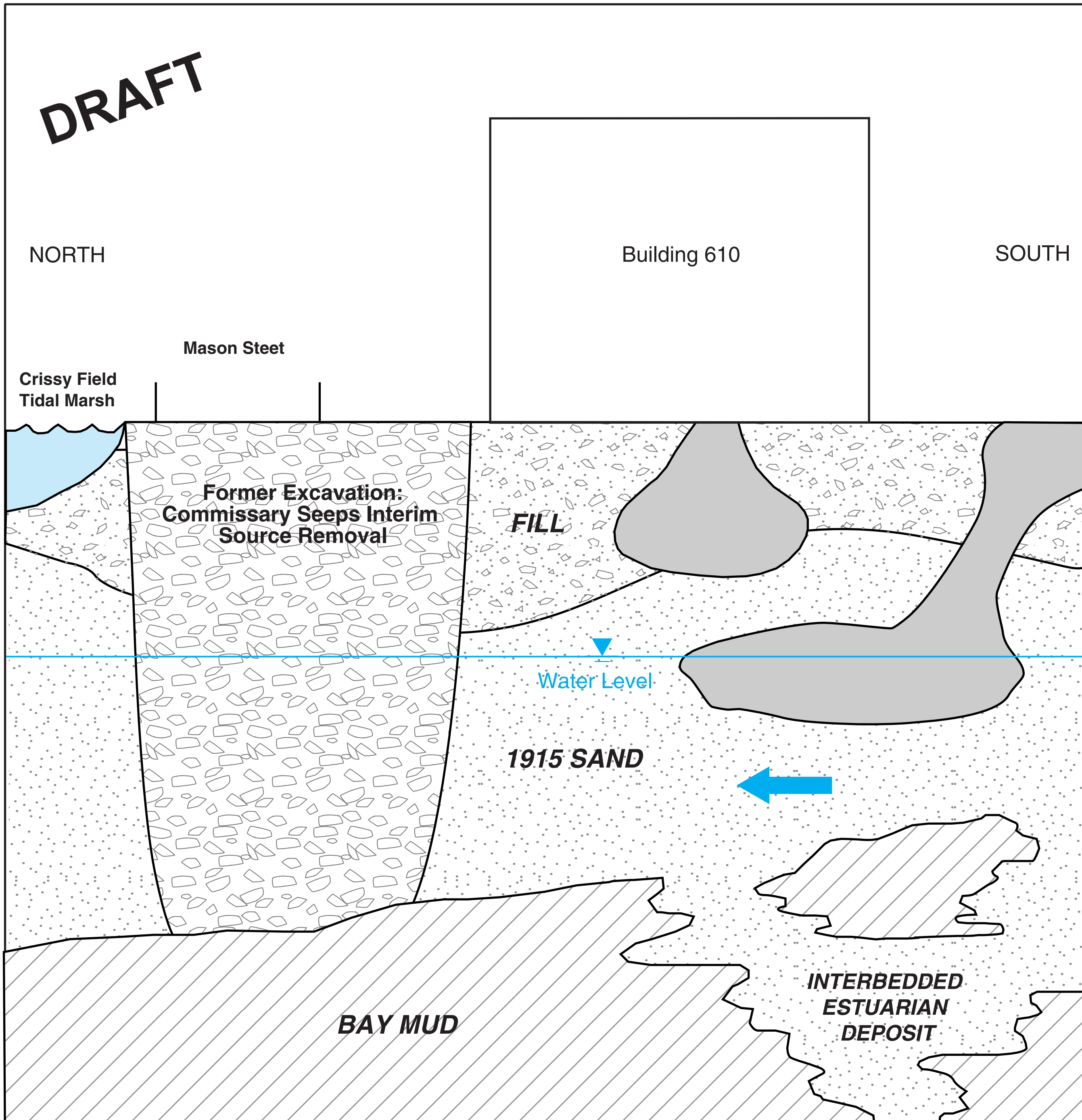
Treadwell&Rollo

THE PRESIDIO TRUST

Presidio Trust
34 Graham Street
P.O. Box 29052
San Francisco, CA
94129-0052
415/561-5300
fax 415/561-5315
July 2004

FIGURE 4

Treadwell & Rollo 2893_11\COMMISSARY\REG_DRAFT_CAP_072404.APR 07/2004



LEGEND

- Bay Mud
- TPH/PAH Impacted Soil
- Fill
- 1915 Sand/Interbedded Estuarian Deposit
- Water level
- Groundwater flow direction
- Geologic contact

Note:
Drawing is schematic, represents typical site subsurface conditions and is not drawn to scale.

GENERALIZED SUBSURFACE CONDITIONS

Treadwell&Rollo

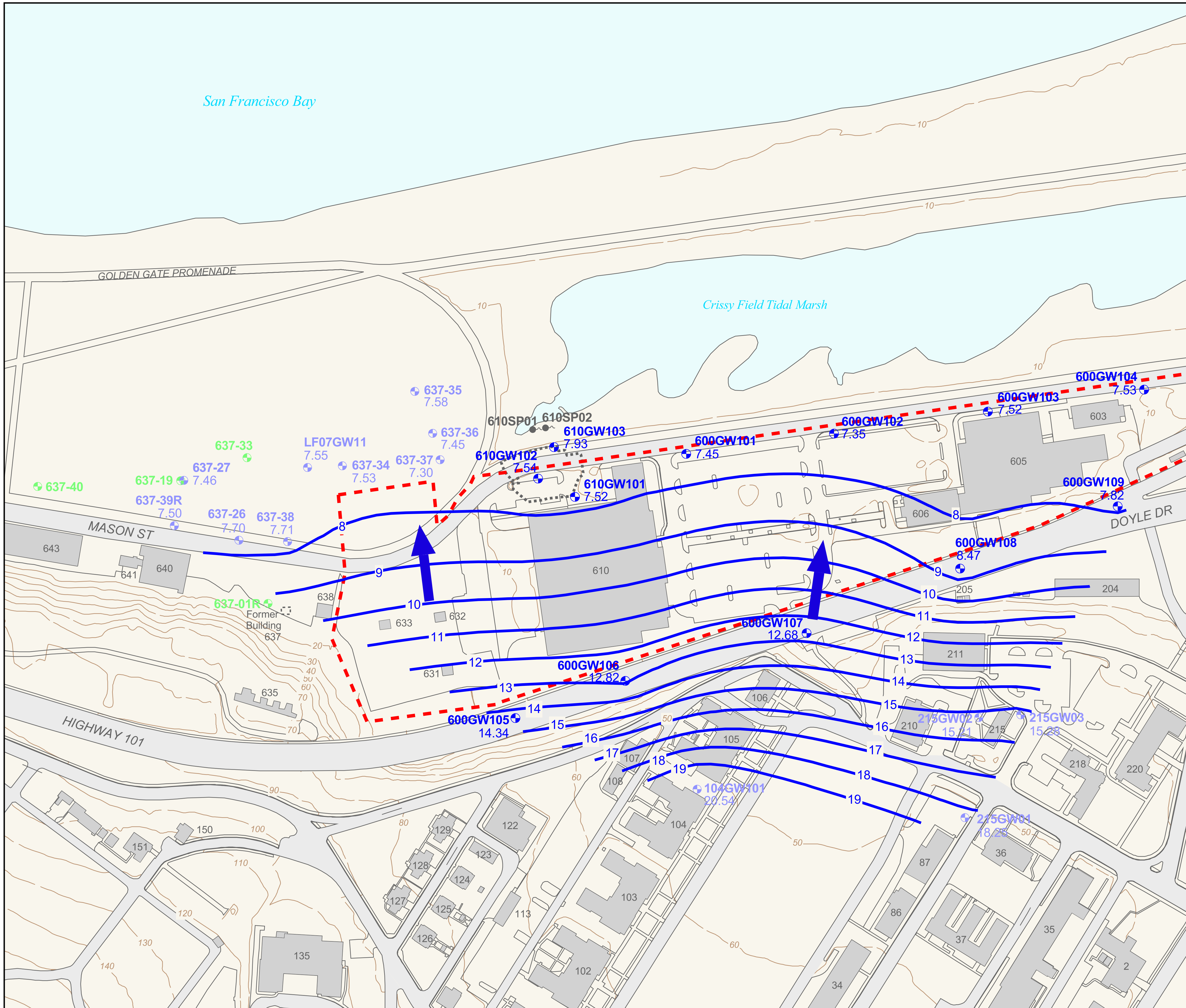
THE PRESIDIO TRUST

Presidio Trust
34 Graham Street
P.O. Box 29052
San Francisco, CA
94129-0052
415/561-5300
fax 561-5315

July 2004

FIGURE 5

Treadwell & Rollo 2893_11\commissary\Figure04_289311_schematic_xsection.ai 06/2004



N

DRAFT

225 0 225 Feet

LEGEND

610GW101 7.45	A1 Groundwater Monitoring Well March 2003 Groundwater Elevation
637-35 7.58	Adjacent Study Area A1 Zone Groundwater Monitoring Well
637-19	Adjacent Study Area A2 Zone Groundwater Monitoring Well
610SP01	Surface Water Seep Location
	Approximate Direction of Groundwater Flow
	Groundwater Contour (Contour Interval : 1 ft)
	Study Area Boundary
	Topographic Contour (Contour Interval : 10 ft)
	Commissary Seeps Interim Source Removal Excavation
610	Building and Number

Notes:
Groundwater elevation data collected at Low Tide on 10 March 2003 between 13:32 pm and 14:40 pm. The 215GW101-103 wells were sounded between 12:15 pm and 12:25 pm whereas 104GW101 was sounded at 15:44 pm.

The excavation boundary is defined in the Commissary Seeps Interim Removal Action Report (Treadwell & Rollo, 2002a).

Horizontal Datum: NAD 27, CA State Plane Coordinates, Zone 3, feet
Vertical Datums: (groundwater) Presidio Lower Low Water (ft. PLLW) (topography) North American Vertical Datum, NAVD88, feet

COMMISSARY / PX AREA
10 MARCH 2003
GROUNDWATER ELEVATION MAP
A1 ZONE WELLS AT LOW TIDE

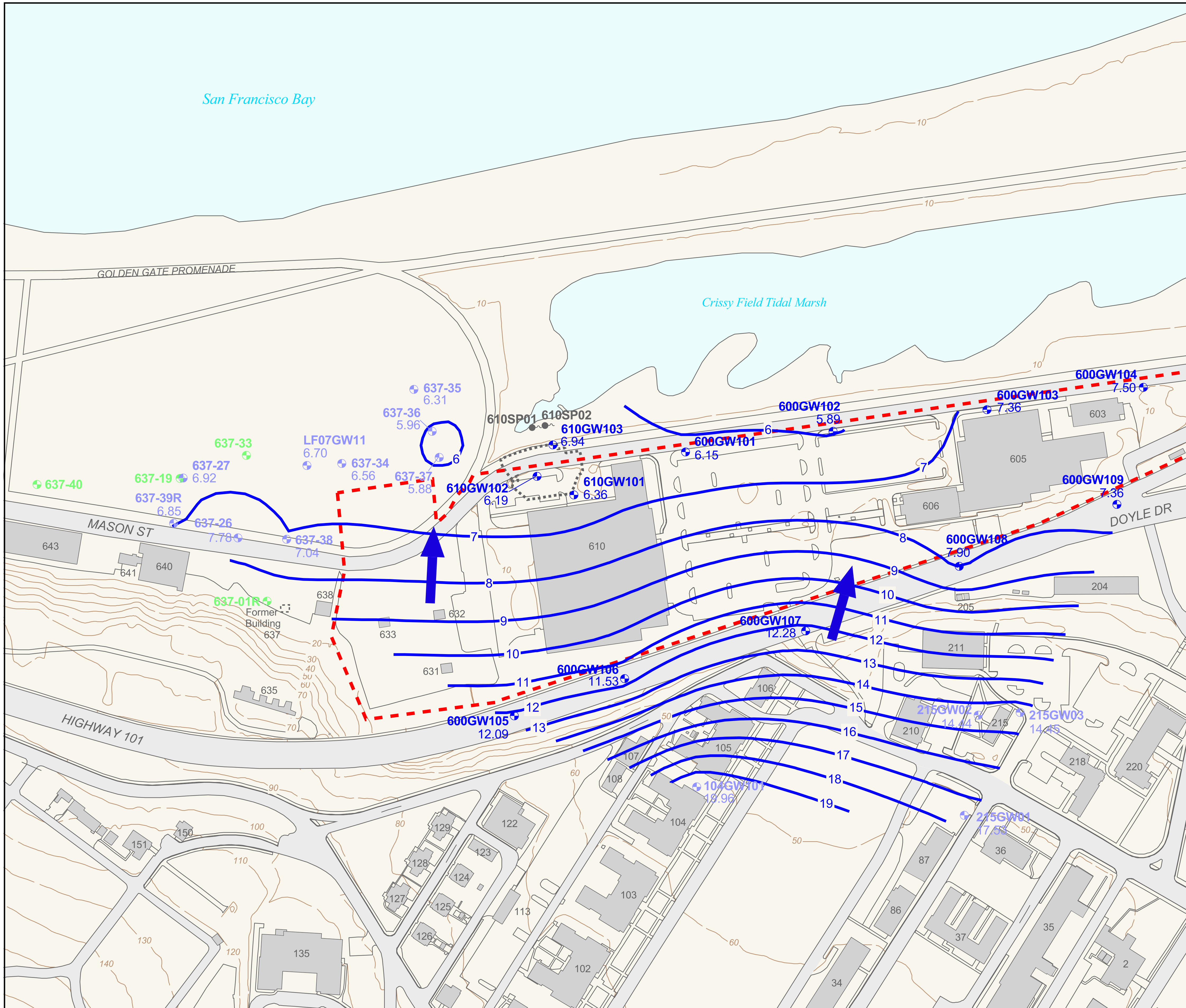
Treadwell&Rollo

THE PRESIDIO TRUST

Presidio Trust
34 Graham Street
P.O. Box 29052
San Francisco, CA
94129-0052
415/561-5300
fax 415/561-5315
July 2004

FIGURE 6

Treadwell & Rollo 2893_11\COMMISSARYREG_DRAFT_CAP_072404.APR 07/2004



N

DRAFT

225 0 225 Feet

LEGEND

- 610GW101 6.36 — A1 Groundwater Monitoring Well June 2003 Groundwater Elevation
- 637-35 6.31 — Adjacent Study Area A1 Zone Groundwater Monitoring Well
- 637-19 — Adjacent Study Area A2 Zone Groundwater Monitoring Well
- 610SP01 — Surface Water Seep Location
- Approximate Direction of Groundwater Flow
- Groundwater Contour (Contour Interval : 1 ft)
- Study Area Boundary
- Topographic Contour (Contour Interval : 10 ft)
- Commissary Seeps Interim Source Removal Excavation
- 610 — Building and Number

Notes:
Groundwater elevation data collected at Low Tide on 2 June 2003 between 10:15 am and 11:44 am. The 215GW101-103 wells were sounded between 14:50 pm and 15:05 pm whereas 104GW101 was sounded at 14:43 pm.

The excavation boundary is defined in the Commissary Seeps Interim Removal Action Report (Treadwell & Rollo, 2002a).

Horizontal Datum: NAD 27, CA State Plane Coordinates, Zone 3, feet
Vertical Datums: (groundwater) Presidio Lower Low Water (ft. PLLW)
(topography) North American Vertical Datum, NAVD88, feet

COMMISSARY / PX AREA
2 JUNE 2003
GROUNDWATER ELEVATION MAP
A1 ZONE WELLS AT LOW TIDE

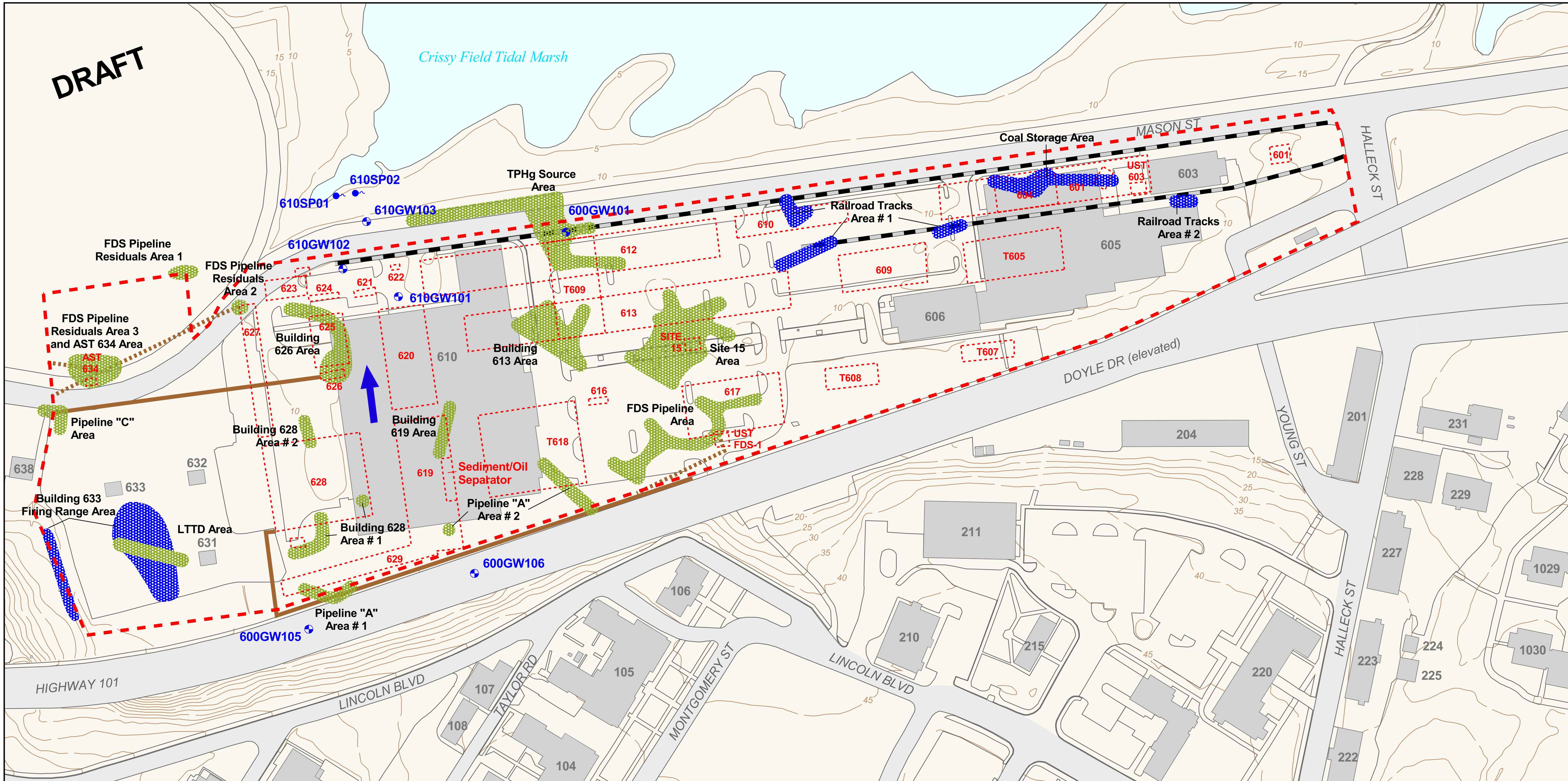
Treadwell&Rollo

THE PRESIDIO TRUST

Presidio Trust
34 Graham Street
P.O. Box 29052
San Francisco, CA
94129-0052
415/561-5300
fax 415/561-5315
July 2004

FIGURE 7

Treadwell & Rollo 2893_11\COMMISSARYREG_DRAFT_CAP_072404.APR 07/2004



Treadwell & Rollo 2893_11\COMMISSARY\REG_DRAFT_CAP_072404.APR 07/2004

LEGEND

- Former Railroad Tracks
- Known or Suspected Fuel Distribution Pipeline
- Removed Fuel Distribution Pipeline
- Study Area Boundary
- 5 Topographic Contour (Contour Interval : 5 Feet)
- Approximate Direction of Groundwater Flow
- Approximate Extent of Impacted Soil at CERCLA Sites.
- Approximate Extent of Impacted Soil
- 629 Former Motor Pool Structure and Identification Number
- 610 Existing Structure and Identification Number
- 610SP01 Proposed Commissary/PX Surface Water Seep Monitoring Location
- 600GW105 Proposed Commissary/PX Surface Water Groundwater Monitoring Well Location

Notes:
Selected Remedial Action for CERCLA Sites to be Presented in "Remedial Action Plan, Baker Beach Disturbed Areas 1, 1A, 2, and 2A and Twenty-Seven Other Sites, Presidio of San Francisco, California" MACTEC, 2004.

Former distribution pipelines and former railroad tracks located outside of the Commissary/PX Study Area omitted for clarity.

Horizontal Datum: NAD 27, CA State Plane Coordinates, Zone 3, feet
Vertical Datum: North American Vertical Datum, NAVD88

N

150 0 150 Feet

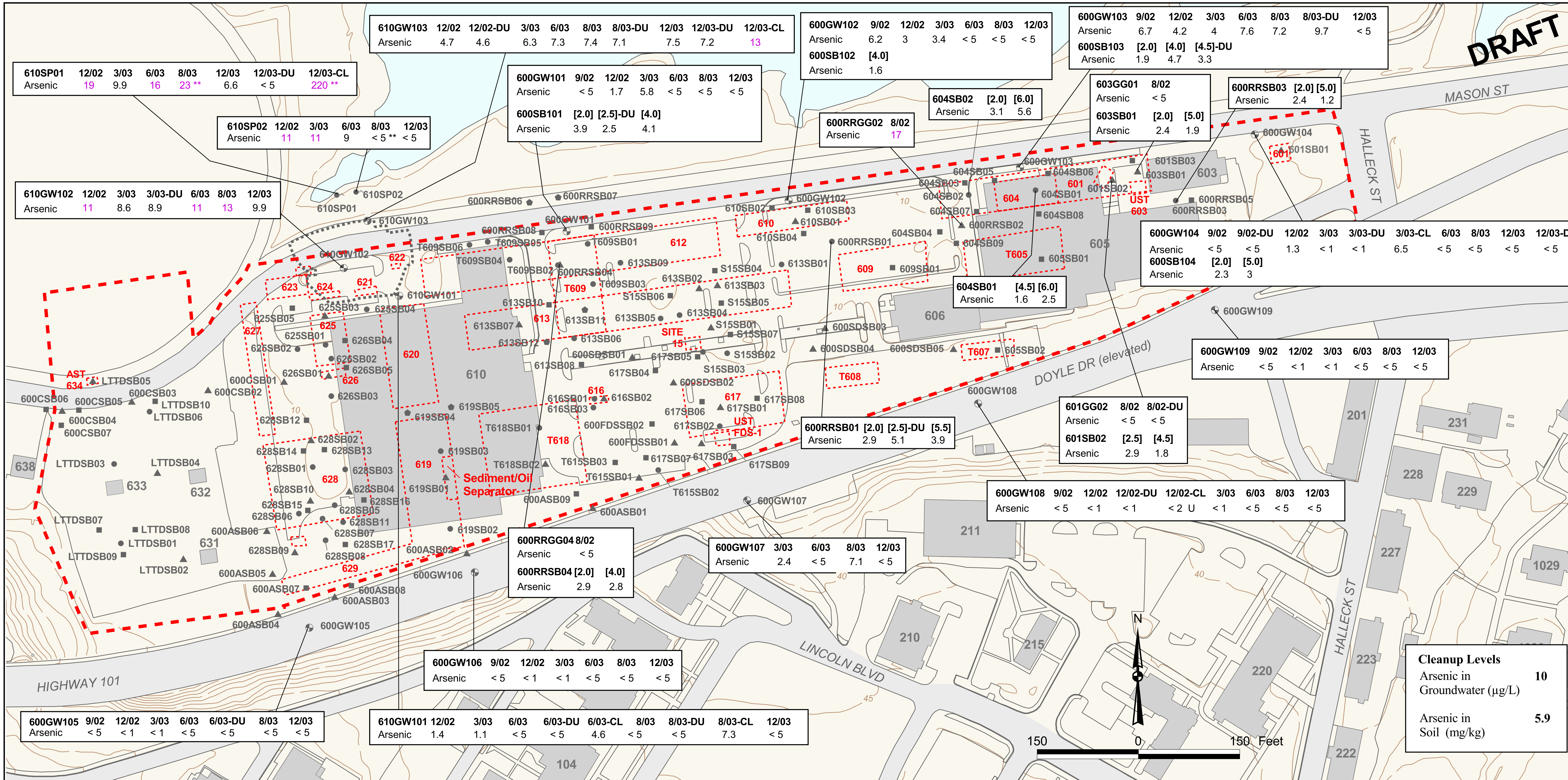
SOIL REMEDIAL UNITS and GROUNDWATER and SURFACE WATER MONITORING NETWORK

Treadwell&Rollo

THE PRESIDIO TRUST

Presidio Trust
34 Graham Street
P.O. Box 29052
San Francisco, CA
94129-0052
415/561-5300
fax 415/561-5315
July 2004

FIGURE 8



LEGEND

- ● LTTDSB01 Phase 1 - Soil Sample Location
- ▲ 600ASB01 Phase 1 - Soil and Groundwater Grab Sample Location
- ■ LTTDSB07 Phase 2 - Soil Sample Location
- ⬟ 619SB04 Phase 2 - Soil and Groundwater Grab Sample Location
- 600GW105 Groundwater Monitoring Well Location
- 610SP01 Seep Sample Location
- Study Area Boundary
- Commissary Seeps Interim Source Removal Excavation
- 5 Topographic Contour (Contour Interval : 5 Feet)
- Presidio Base Map
- 629 Former Motor Pool Structure and Identification Number
- 610 Existing Structure and Identification Number

Groundwater Results

Sample Date / Duplicate Sample / Quality Control Duplicate Sample

600GW108	9/02	12/02	12/02-DU	12/02-CL	3/03	6/03	8/03	12/03
Arsenic	140 *	< 20	< 20	< 10	< 20	< 20	< 20	< 20

Refer to Notes

Values in pink are above cleanup levels

Soil Results

Depth in Feet / Duplicate Sample

600RRSB01	[2.0]	[2.5]-DU	[5.5]
Arsenic	2.9	5.1	3.9

Notes:
Results reported in micrograms/liter (µg/L) for groundwater and milligrams/kilogram (mg/kg) for soil.

Additional Results and Data Qualifers are presented in Appendix C.

CL - Suffix denotes a Quality Control Duplicate Sample sent to a Control Lab.

NA - Not analyzed

** - Total metals results; samples were not filtered.

Horizontal Datum: NAD 27, CA State Plane Coordinates, Zone 3, feet
Vertical Datum: North American Vertical Datum, NAVD88

"GW" and "GG" indicate groundwater samples
"SB" indicates soil sample

ARSENIC IN SOIL AND GROUNDWATER

Treadwell&Rollo

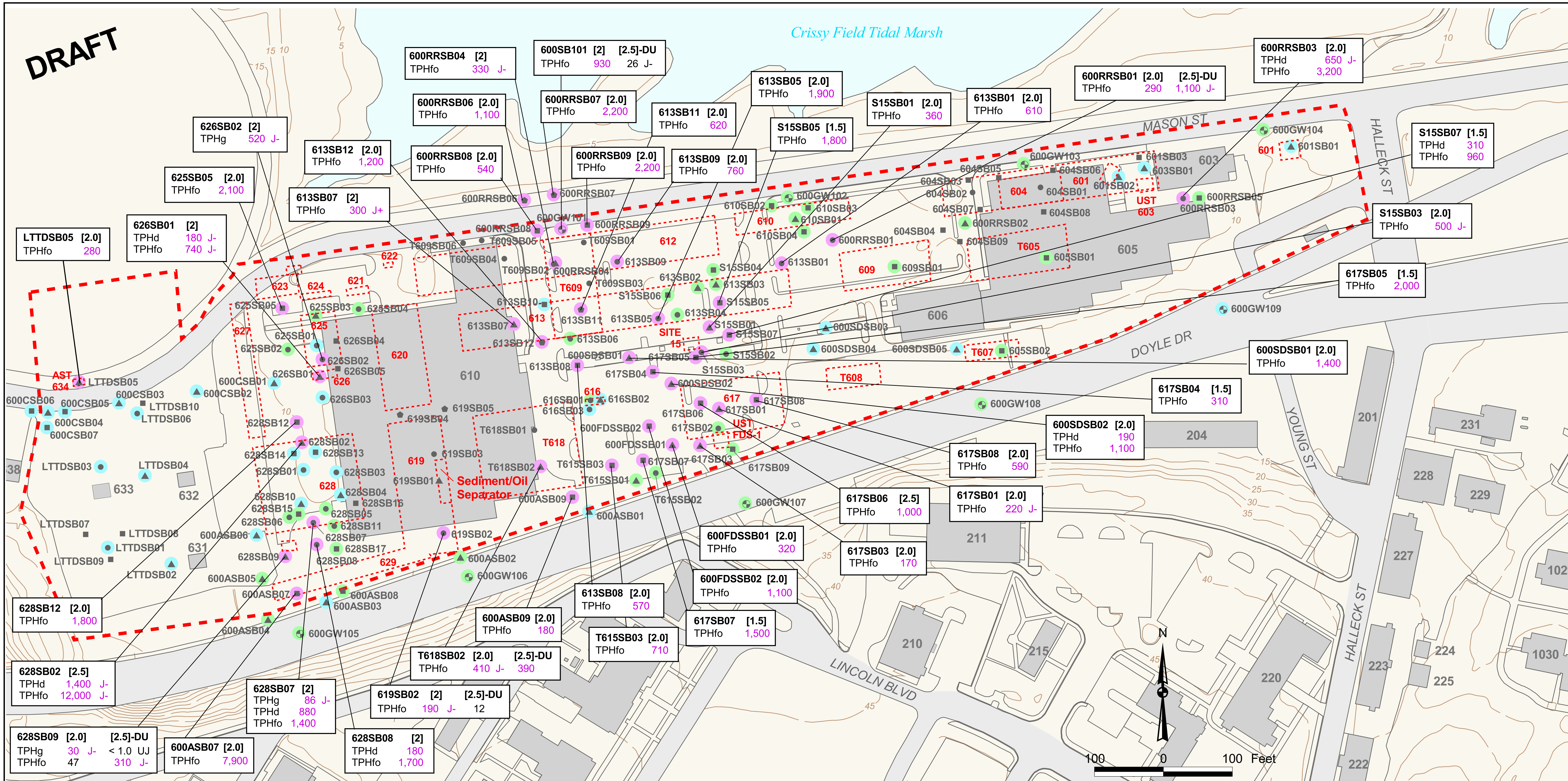
THE PRESIDIO TRUST

Presidio Trust
34 Graham Street
P.O. Box 29052
San Francisco, CA
94129-0052
415/561-5300
fax 415/561-5315

July 2004

FIGURE 9

Treadwell & Rollo 2893_11\COMMISSARYREG_DRAFT_CAP_072404.APR 07/2004



LEGEND

● LTTDSB01	Phase 1 - Soil Sample Location	
▲ 600ASB01	Phase 1 - Soil and Groundwater Grab Sample Location	
■ LTTDSB07	Phase 2 - Soil Sample Location	
⬟ 619SB04	Phase 2 - Soil and Groundwater Grab Sample Location	
600GW105	Groundwater Monitoring Well Location	

- Study Area Boundary
- 5 — Topographic Contour (Contour Interval : 5 Feet)
- Presidio Base Map
- 629 — Former Motor Pool Structure and Identification Number
- 610 — Existing Structure and Identification Number

[depth in feet]

T618SB02	[2.0]	[2.5]-DU
TPHfo	410 J-	390

Duplicate Sample
Values in pink are above cleanup levels
Data Qualifiers

Abbreviated Analytes
TPHg - Total Petroleum Hydrocarbons as Gasoline
TPHd - Total Petroleum Hydrocarbons as Diesel
TPHfo - Total Petroleum Hydrocarbons as Fuel Oil

Cleanup Levels:
TPHg - 11.6 mg/kg
TPHd - 144 mg/kg
TPHfo - 144 mg/kg

- Value above cleanup level
- Value below cleanup level
- Not detected

Notes:
Results reported in milligrams/kilogram (mg/kg).

Data qualifiers are presented in Table C-1.

Horizontal Datum: NAD 27, CA State Plane Coordinates, Zone 3, feet
Vertical Datum: North American Vertical Datum, NAVD88

TPH CONTAMINANTS OF CONCERN IN SHALLOW SOIL (0 - 3 FEET)

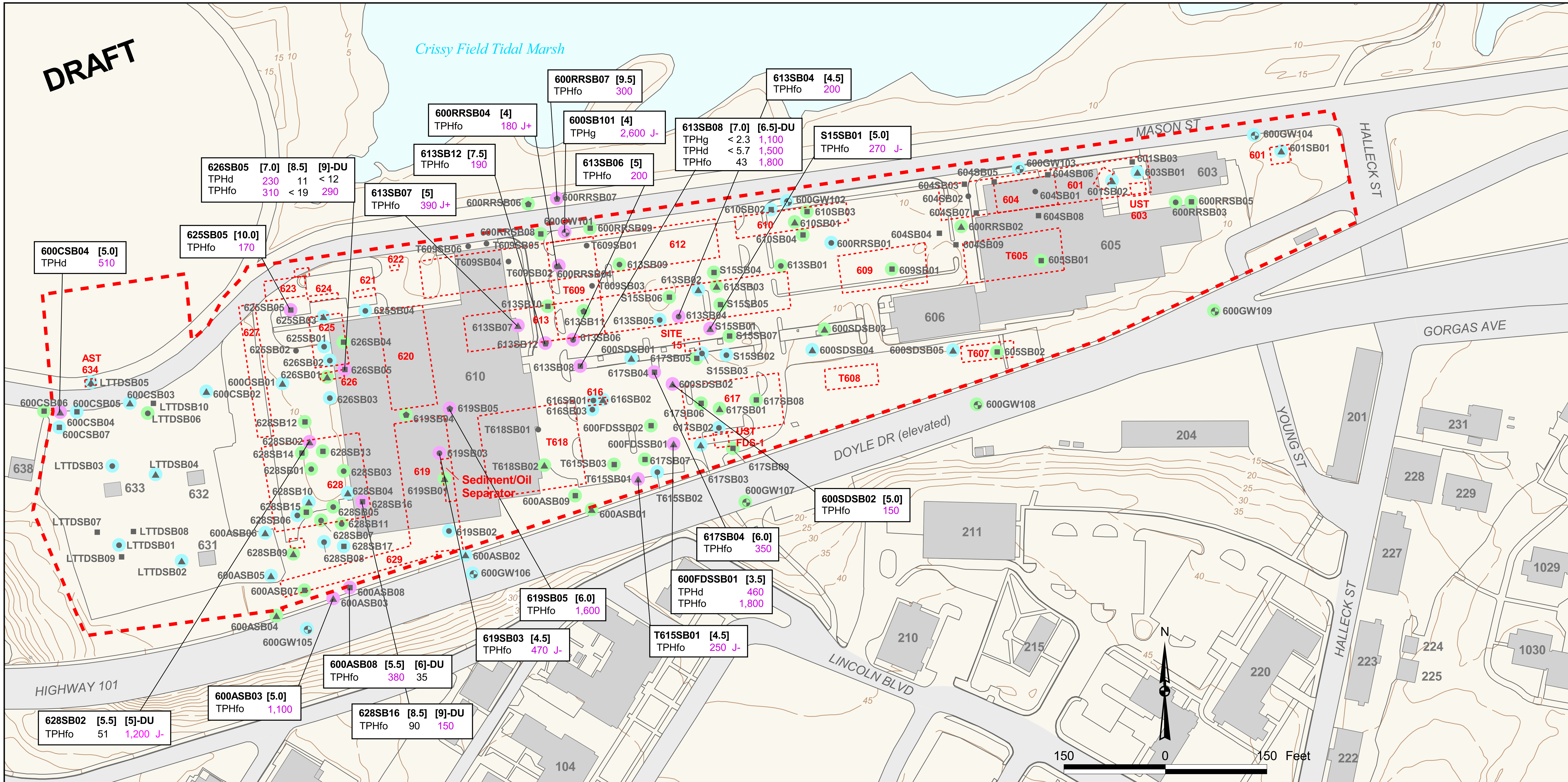
Treadwell&Rollo

THE PRESIDIO TRUST

Presidio Trust
34 Graham Street
P.O. Box 29052
San Francisco, CA
94129-0052
415/561-5300
fax 415/561-5315
July 2004

FIGURE 10

Treadwell & Rollo 2893_11\COMMISSARYREG_DRAFT_CAP_072404.APR 07/2004



LEGEND

- ● LTTDSB01 Phase 1 - Soil Sample Location
- ▲ 600ASB01 Phase 1 - Soil and Groundwater Grab Sample Location
- ■ LTTDSB07 Phase 2 - Soil Sample Location
- ⬟ 619SB04 Phase 2 - Soil and Groundwater Grab Sample Location
- 600GW105 Groundwater Monitoring Well Location
- Study Area Boundary
- Topographic Contour (Contour Interval : 5 Feet)
- Presidio Base Map
- 629 Former Motor Pool Structure and Identification Number
- 610 Existing Structure and Identification Number

[depth in feet]

628SB02	[5.5]	[5]-DU
TPHfo	51	1,200 J-

— Duplicate Sample
— Data Qualifiers

Values in pink are above cleanup levels

Abbreviated Analytes
TPHg - Total Petroleum Hydrocarbons as Gasoline
TPHd - Total Petroleum Hydrocarbons as Diesel
TPHfo - Total Petroleum Hydrocarbons as Fuel Oil

Cleanup Levels:
TPHg - 11.6 mg/kg
TPHd - 144 mg/kg
TPHfo - 144 mg/kg

- Value above cleanup level
- Value below cleanup level
- Not detected

Notes:
Results reported in milligrams/kilogram (mg/kg).

Data qualifiers are presented in Table C-1.

Horizontal Datum: NAD 27, CA State Plane Coordinates, Zone 3, feet
Vertical Datum: North American Vertical Datum, NAVD88

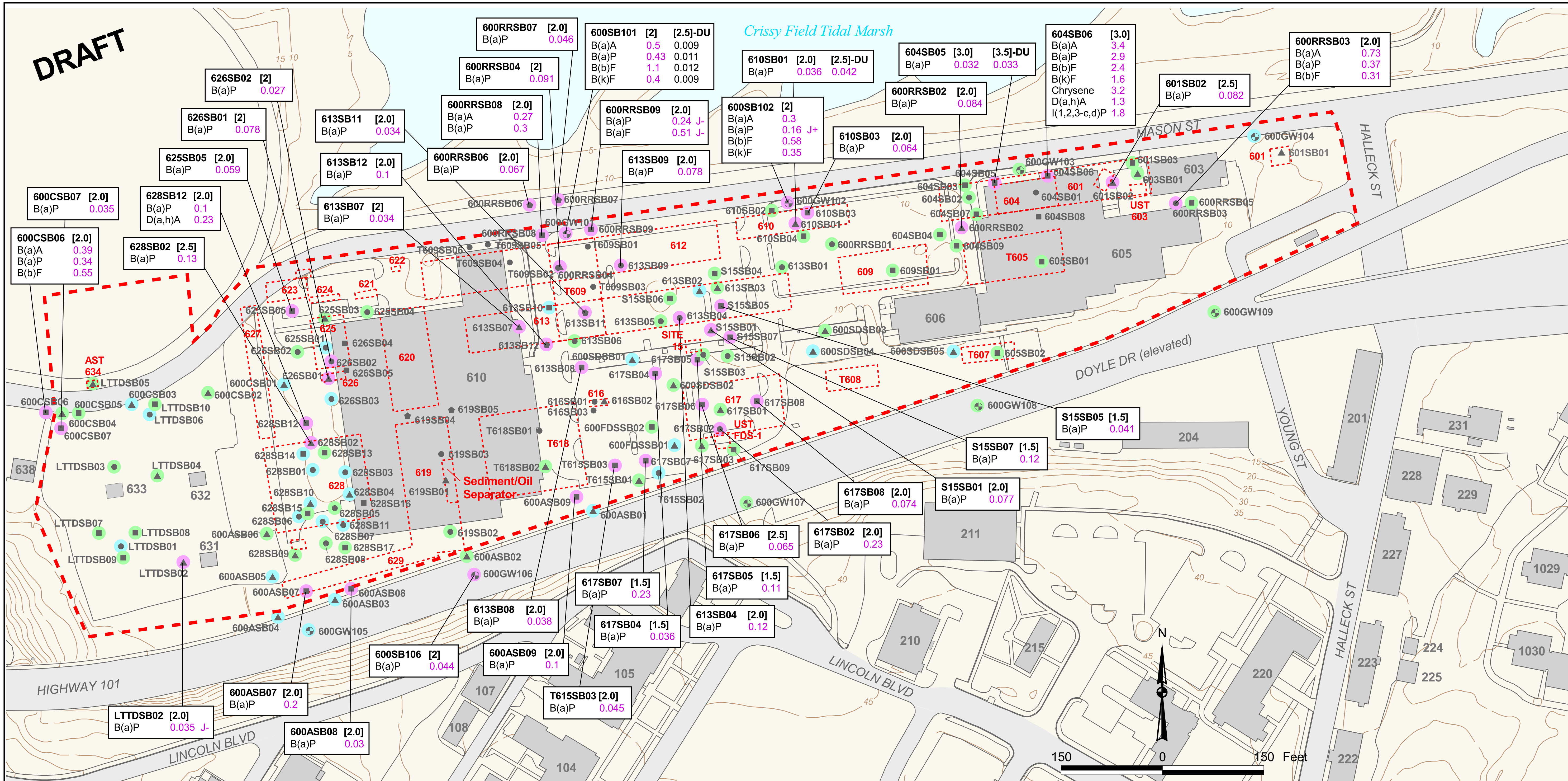
TPH CONTAMINANTS OF CONCERN IN DEEP SOIL (> 3 FEET)

Treadwell&Rollo

THE PRESIDIO TRUST
Presidio Trust
34 Graham Street
P.O. Box 29052
San Francisco, CA
94129-0052
415/561-5300
fax 415/561-5315
July 2004

FIGURE 11

Treadwell & Rollo 2893_11\COMMISSARYREG_DRAFT_CAP_072404.APR 07/2004



LEGEND

● LTTDSB01	Phase 1 - Soil Sample Location	
▲ 600ASB01	Phase 1 - Soil and Groundwater Grab Sample Location	
■ LTTDSB07	Phase 2 - Soil Sample Location	
⬟ 619SB04	Phase 2 - Soil and Groundwater Grab Sample Location	
600GW105	Groundwater Monitoring Well Location	

Study Area Boundary

5 — Topographic Contour (Contour Interval : 5 Feet)

Presidio Base Map

629 — Former Motor Pool Structure and Identification Number

610 — Existing Structure and Identification Number

[depth in feet]

600SB101	[2]	[2]-DU
B(a)A	0.5	0.009
B(a)P	0.43	0.011
B(b)F	1.1	0.012
B(k)F	0.4	0.009

Duplicate Sample

Values in pink are above screening levels

Abbreviated Analytes

B(a)A - Benzo(a)Anthracene
B(a)P - Benzo(a)Pyrene
B(b)F - Benzo(b)Fluoranthene
B(k)F - Benzo(k)Fluoranthene
D(a,h)A - Dibenz(a,h)Anthracene
I(1,2,3-c,d)P - Indeno(1,2,3-c,d)Pyrene

Cleanup Levels:

B(a)A - 0.27 mg/kg
B(a)P - 0.027 mg/kg
B(b)F - 0.27 mg/kg
B(k)F - 0.27 mg/kg
Chrysene - 2.7 mg/kg
D(a,h)A - 0.19 mg/kg
I(1,2,3-c,d)P - 0.27 mg/kg

Value above cleanup level
Value below cleanup level
Not detected

Notes:
Results reported in milligrams/kilogram (mg/kg).

Data qualifiers are presented in Table C-3.

Horizontal Datum: NAD 27, CA State Plane Coordinates, Zone 3, feet
Vertical Datum: North American Vertical Datum, NAVD88

PAH CONTAMINANTS OF CONCERN IN SHALLOW SOIL (0 - 3 FEET)

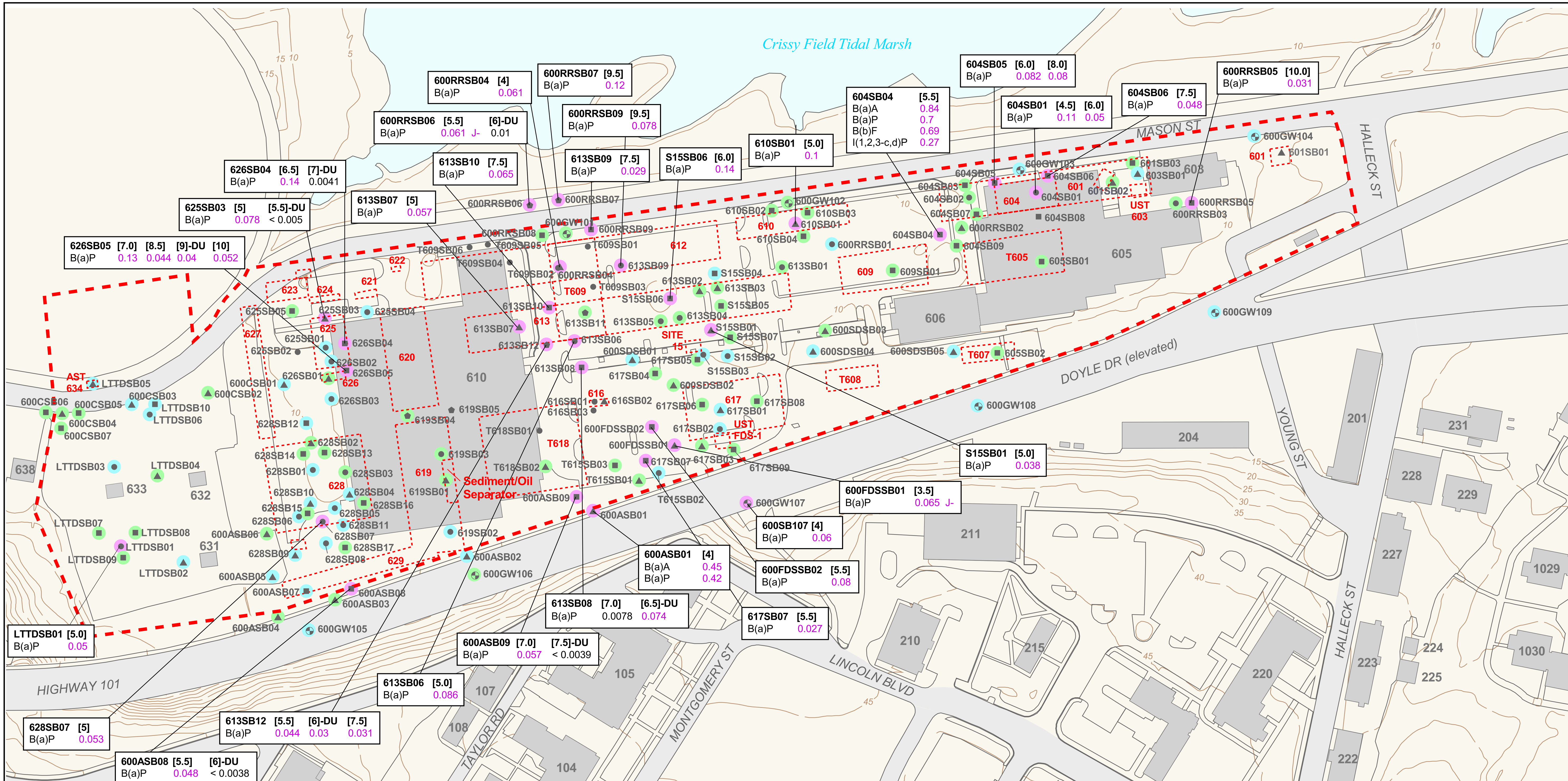
Treadwell&Rollo

Presidio Trust
34 Graham Street
P.O. Box 29052
San Francisco, CA
94129-0052
415/561-5300
fax 415/561-5315

July 2004

FIGURE 12

Treadwell & Rollo 2893_11\COMMISSARYREG_DRAFT_CAP_072404.APR 07/2004



LEGEND

- ● LTTDSB01 — Phase 1 - Soil Sample Location
- ▲ 600ASB01 — Phase 1 - Soil and Groundwater Grab Sample Location
- ■ LTTDSB07 — Phase 2 - Soil Sample Location
- ⬟ 619SB04 — Phase 2 - Soil and Groundwater Grab Sample Location
- 600GW105 — Groundwater Monitoring Well Location

- Study Area Boundary
- 5 — Topographic Contour (Contour Interval : 5 Feet)
- Presidio Base Map
- 629 — Former Motor Pool Structure and Identification Number
- 610 — Existing Structure and Identification Number

[depth in feet]

625SB03	[5]	[5.5]-DU
B(a)P	0.078	< 0.005

Duplicate Sample

Values in pink are above screening levels

Abbreviated Analytes
B(a)A - Benzo(a)Anthracene
B(a)P - Benzo(a)Pyrene
B(b)F - Benzo(b)Fluoranthene
I(1,2,3-c,d)P - Indeno(1,2,3-c,d)Pyrene

Cleanup Levels:
B(a)A - 0.27 mg/kg
B(a)P - 0.027 mg/kg
B(b)F - 0.27 mg/kg
I(1,2,3-c,d)P - 0.27 mg/kg

- Value above cleanup level
- Value below cleanup level
- Not detected

Notes:
Results reported in milligrams/kilogram (mg/kg).

Data qualifiers are presented in Table C-3.

Horizontal Datum: NAD 27, CA State Plane Coordinates, Zone 3, feet
Vertical Datum: North American Vertical Datum, NAVD88

PAH CONTAMINANTS OF CONCERN IN DEEP SOIL (> 3 FEET)

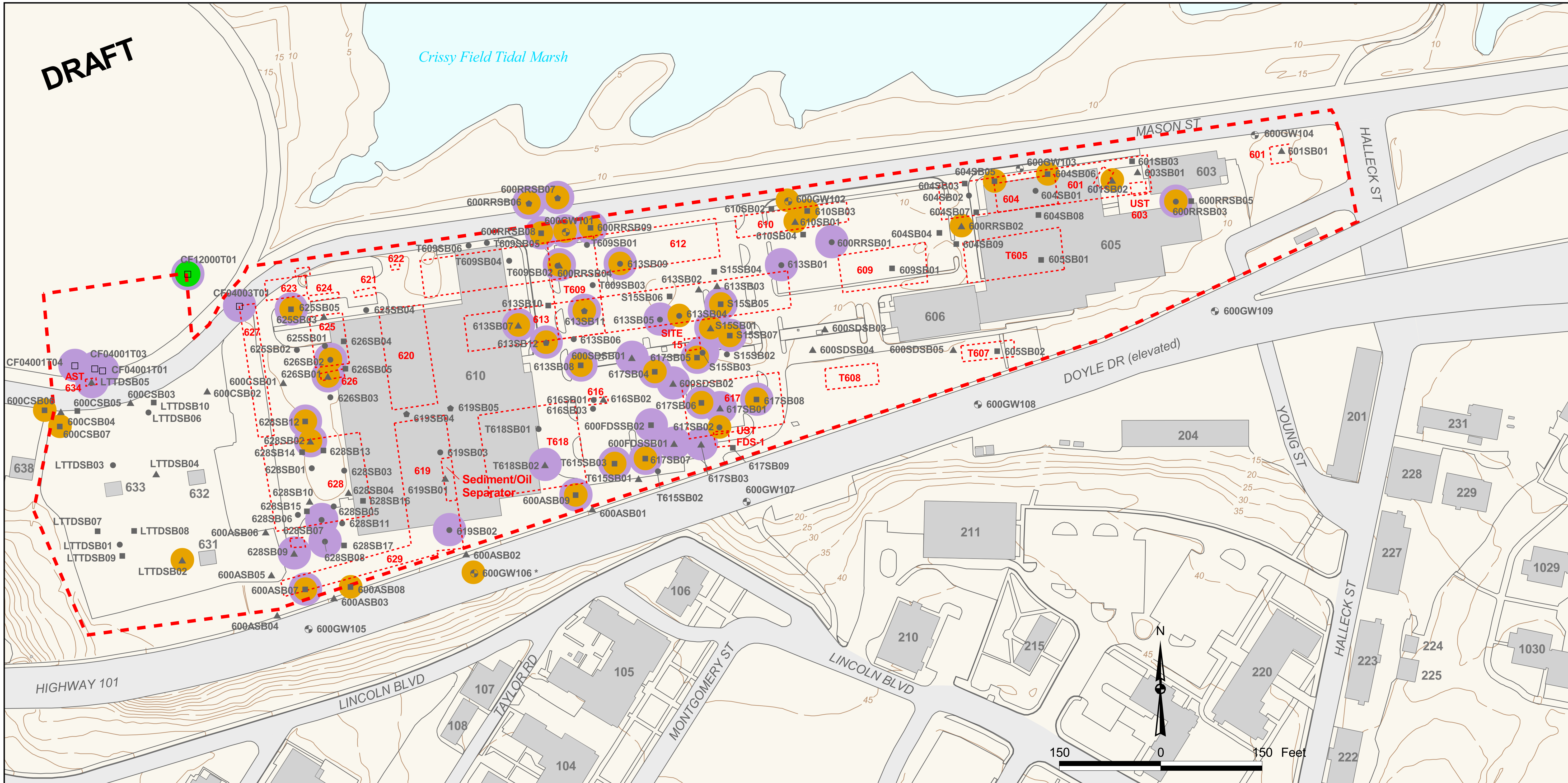
Treadwell&Rollo

THE PRESIDIO TRUST

Presidio Trust
34 Graham Street
P.O. Box 29052
San Francisco, CA
94129-0052
415/561-5300
fax 415/561-5315
July 2004

FIGURE 13

Treadwell & Rollo 2893_11\COMMISSARYREG_DRAFT_CAP_072404.APR 07/2004



LEGEND

- ● LTTDSB01 — Phase 1 - Soil Sample Location
- ▲ 600ASB01 — Phase 1 - Soil and Groundwater Grab Sample Location
- ■ LTTDSB07 — Phase 2 - Soil Sample Location
- ⬟ 619SB04 — Phase 2 - Soil and Groundwater Grab Sample Location
- □ CF04003T01 — Army FDS Closure Excavation Soil Sample (IT, 1999)
- 600GW105 — Groundwater Monitoring Well Location
- Study Area Boundary
- Topographic Contour (Contour Interval : 5 Feet)
- Presidio Base Map
- 629 — Former Motor Pool Structure and Identification Number
- 610 — Existing Structure and Identification Number
- PAH Exceedance in Shallow Soil Samples
- BTEX Exceedance in Shallow Soil Samples
- TPH Exceedance in Shallow Soil Samples

Notes:

* Upgradient Location Outside of Study Area

Horizontal Datum: NAD 27, CA State Plane Coordinates, Zone 3, feet
Vertical Datum: North American Vertical Datum, NAVD88

CLEANUP LEVEL EXCEEDANCES IN SHALLOW SOIL (0 - 3 FEET)

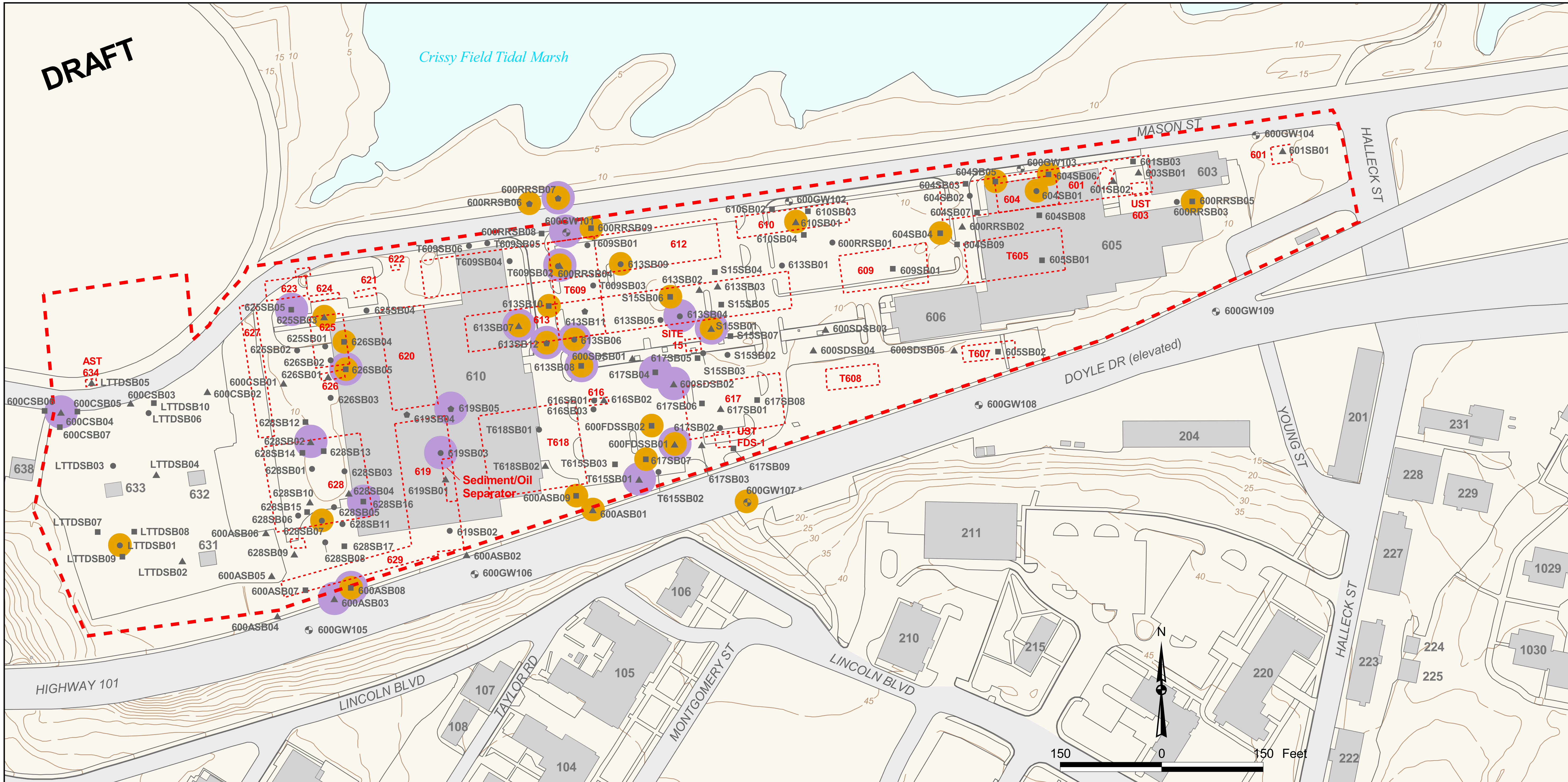
Treadwell&Rollo

THE PRESIDIO TRUST

Presidio Trust
34 Graham Street
P.O. Box 29052
San Francisco, CA
94129-0052
415/561-5300
fax 415/561-5315
July 2004

FIGURE 14

Treadwell & Rollo 2893_11\COMMISSARY\REG_DRAFT_CAP_072404.APR 07/2004



LEGEND

● LTTDSB01	Phase 1 - Soil Sample Location
▲ 600ASB01	Phase 1 - Soil and Groundwater Grab Sample Location
■ LTTDSB07	Phase 2 - Soil Sample Location
⬟ 619SB04	Phase 2 - Soil and Groundwater Grab Sample Location
600GW105	Groundwater Monitoring Well Location
	Study Area Boundary
5	Topographic Contour (Contour Interval : 5 Feet)
	Presidio Base Map
629	Former Motor Pool Structure and Identification Number
610	Existing Structure and Identification Number
	PAH Exceedance in Deep Soil Samples
	TPH Exceedance in Deep Soil Samples

Notes:

* Upgradient Location Outside of Study Area

Horizontal Datum: NAD 27, CA State Plane Coordinates, Zone 3, feet
Vertical Datum: North American Vertical Datum, NAVD88

CLEANUP LEVEL EXCEEDANCES IN DEEP SOIL (> 3 FEET)

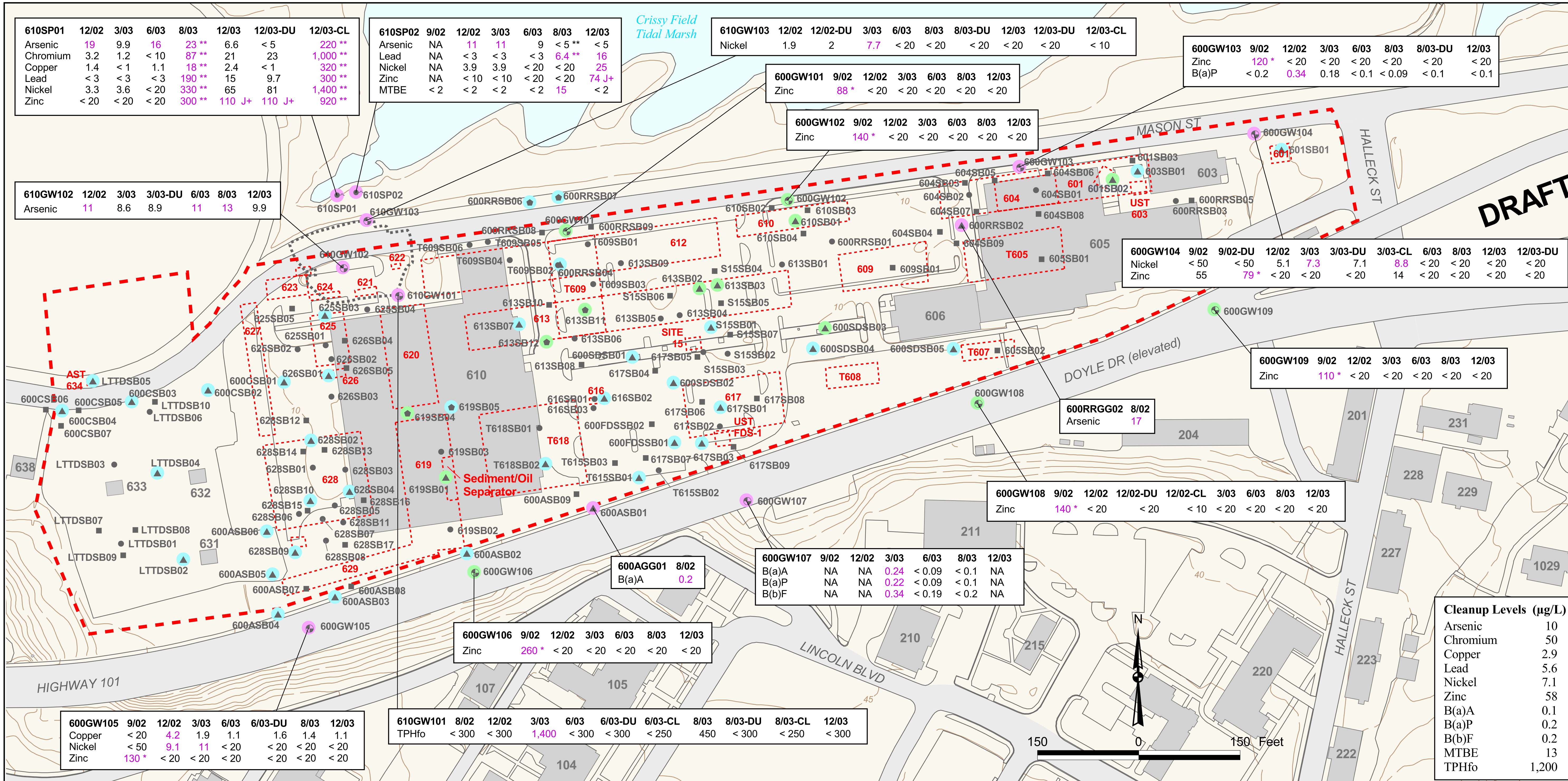
Treadwell&Rollo

Presidio Trust
34 Graham Street
P.O. Box 29052
San Francisco, CA
94129-0052
415/561-5300
fax 415/561-5315

THE PRESIDIO TRUST

July 2004

FIGURE 15



610SP01	12/02	3/03	6/03	8/03	12/03	12/03-DU	12/03-CL
Arsenic	19	9.9	16	23 **	6.6	< 5	220 **
Chromium	3.2	1.2	< 10	87 **	21	23	1,000 **
Copper	1.4	< 1	1.1	18 **	2.4	< 1	320 **
Lead	< 3	< 3	< 3	190 **	15	9.7	300 **
Nickel	3.3	3.6	< 20	330 **	65	81	1,400 **
Zinc	< 20	< 20	< 20	300 **	110 J+	110 J+	920 **

610SP02	9/02	12/02	3/03	6/03	8/03	12/03
Arsenic	NA	11	11	9	< 5 **	< 5
Lead	NA	< 3	< 3	< 3	6.4 **	16
Nickel	NA	3.9	3.9	< 20	< 20	25
Zinc	NA	< 10	< 10	< 20	< 20	74 J+
MTBE	< 2	< 2	< 2	< 2	15	< 2

610GW103	12/02	12/02-DU	3/03	6/03	8/03	8/03-DU	12/03	12/03-DU	12/03-CL
Nickel	1.9	2	7.7	< 20	< 20	< 20	< 20	< 20	< 10

600GW103	9/02	12/02	3/03	6/03	8/03	8/03-DU	12/03
Zinc	120 *	< 20	< 20	< 20	< 20	< 20	< 20
B(a)P	< 0.2	0.34	0.18	< 0.1	< 0.09	< 0.1	< 0.1

600GW101	9/02	12/02	3/03	6/03	8/03	12/03
Zinc	88 *	< 20	< 20	< 20	< 20	< 20

600GW102	9/02	12/02	3/03	6/03	8/03	12/03
Zinc	140 *	< 20	< 20	< 20	< 20	< 20

610GW102	12/02	3/03	3/03-DU	6/03	8/03	12/03
Arsenic	11	8.6	8.9	11	13	9.9

600GW104	9/02	9/02-DU	12/02	3/03	3/03-DU	3/03-CL	6/03	8/03	12/03	12/03-DU
Nickel	< 50	< 50	5.1	7.3	7.1	8.8	< 20	< 20	< 20	< 20
Zinc	55	79 *	< 20	< 20	< 20	14	< 20	< 20	< 20	< 20

600GW109	9/02	12/02	3/03	6/03	8/03	12/03
Zinc	110 *	< 20	< 20	< 20	< 20	< 20

600RRGG02	8/02
Arsenic	17

600GW108	9/02	12/02	12/02-DU	12/02-CL	3/03	6/03	8/03	12/03
Zinc	140 *	< 20	< 20	< 10	< 20	< 20	< 20	< 20

600AGG01	8/02
B(a)A	0.2

600GW107	9/02	12/02	3/03	6/03	8/03	12/03
B(a)A	NA	NA	0.24	< 0.09	< 0.1	NA
B(a)P	NA	NA	0.22	< 0.09	< 0.1	NA
B(b)F	NA	NA	0.34	< 0.19	< 0.2	NA

600GW106	9/02	12/02	3/03	6/03	8/03	12/03
Zinc	260 *	< 20	< 20	< 20	< 20	< 20

600GW105	9/02	12/02	3/03	6/03	6/03-DU	8/03	12/03
Copper	< 20	4.2	1.9	1.1	1.6	1.4	1.1
Nickel	< 50	9.1	11	< 20	< 20	< 20	< 20
Zinc	130 *	< 20	< 20	< 20	< 20	< 20	< 20

610GW101	8/02	12/02	3/03	6/03	6/03-DU	6/03-CL	8/03	8/03-DU	8/03-CL	12/03
TPHfo	< 300	< 300	1,400	< 300	< 300	< 250	450	< 300	< 250	< 300

Cleanup Levels	(µg/L)
Arsenic	10
Chromium	50
Copper	2.9
Lead	5.6
Nickel	7.1
Zinc	58
B(a)A	0.1
B(a)P	0.2
B(b)F	0.2
MTBE	13
TPHfo	1,200

LEGEND

- ● LTTDSB01 Phase 1 - Soil Sample Location
- ▲ 600ASB01 Phase 1 - Soil and Groundwater Grab Sample Location
- ■ LTTDSB07 Phase 2 - Soil Sample Location
- ⬟ 619SB04 Phase 2 - Soil and Groundwater Grab Sample Location
- 600GW105 Groundwater Monitoring Well Location
- 610SP01 Seep Sample Location
- Study Area Boundary
- Commissary Seeps Interim Source Removal Excavation
- 5 Topographic Contour (Contour Interval : 5 Feet)
- Presidio Base Map
- 629 Former Motor Pool Structure and Identification Number
- 610 Existing Structure and Identification Number

Sample Date — Duplicate Sample — Quality Control Duplicate Sample

600GW108	9/02	12/02	12/02-DU	12/02-CL	3/03	6/03	8/03	12/03
Zinc	140 *	< 20	< 20	< 10	< 20	< 20	< 20	< 20

Refer to Notes

Values in pink are above cleanup levels

Abbreviated Analytes
B(a)A - Benzo(a)Anthracene
B(a)P - Benzo(a)Pyrene
B(b)F - Benzo(b)Fluoranthene
MTBE - Methyl Tertiary-Butyl Ether
TPHfo - Total Petroleum Hydrocarbons as Fuel Oil

- Value above cleanup level - refer to chembox for specific analytes
- Value below cleanup level for all analytes
- No analytes detected

Notes:
Results reported in micrograms/liter (µg/L).

Additional Results for 610 wells and Data Qualifiers are presented in Appendix C.

CL - Suffix denotes a Quality Control Duplicate Sample sent to a Control Lab.

NA - Not analyzed

* - Zinc exceedances due to filter type used by Blaine Tech in September 2002 (refer to Section 2 of the main text)

** - Total metals results; samples were not filtered.

Horizontal Datum: NAD 27, CA State Plane Coordinates, Zone 3, feet
Vertical Datum: North American Vertical Datum, NAVD88

POTENTIAL CONTAMINANTS OF CONCERN IN GROUNDWATER

Treadwell&Rollo

Presidio Trust
34 Graham Street
P.O. Box 29052
San Francisco, CA
94129-0052
415/561-5300
fax 415/561-5315

THE PRESIDIO TRUST

July 2004

FIGURE 16

Treadwell & Rollo 2893_11\COMMISSARYREG_DRAFT_CAP_072404.APR 07/2004

DRAFT

LEGEND

- ● LTTDSB01 Phase 1 - Soil Sample Location
- ▲ 600ASB01 Phase 1 - Soil and Groundwater Grab Sample Location
- ■ LTTDSB07 Phase 2 - Soil Sample Location
- ⬟ 619SB04 Phase 2 - Soil and Groundwater Grab Sample Location
- 600GW105 Groundwater Monitoring Well Location
- Known or Suspected Fuel Distribution Pipeline
- Removed Fuel Distribution Pipeline
- Study Area Boundary
- PAH Exceedance in Soil Samples
- TPH Exceedance in Soil Samples
- Approximate Extent of Accessible Shallow Impacted Soil (0-3 feet)
- Approximate Extent of Accessible Deep Impacted Soil (0-10 feet)
- Approximate Extent of Less Accessible Shallow Impacted Soil (0-3 feet)
- Approximate Extent of Less Accessible Deep Impacted Soil (0-10 feet)
- 610 Existing Structure and Identification Number

Notes:
yd³ - cubic yards

Former distribution pipelines and former railroad tracks located outside of the Commissary/PX Study Area omitted for clarity.

Horizontal Datum: NAD 27, CA State Plane Coordinates, Zone 3, feet

CENTRAL SOIL REMEDIAL UNITS

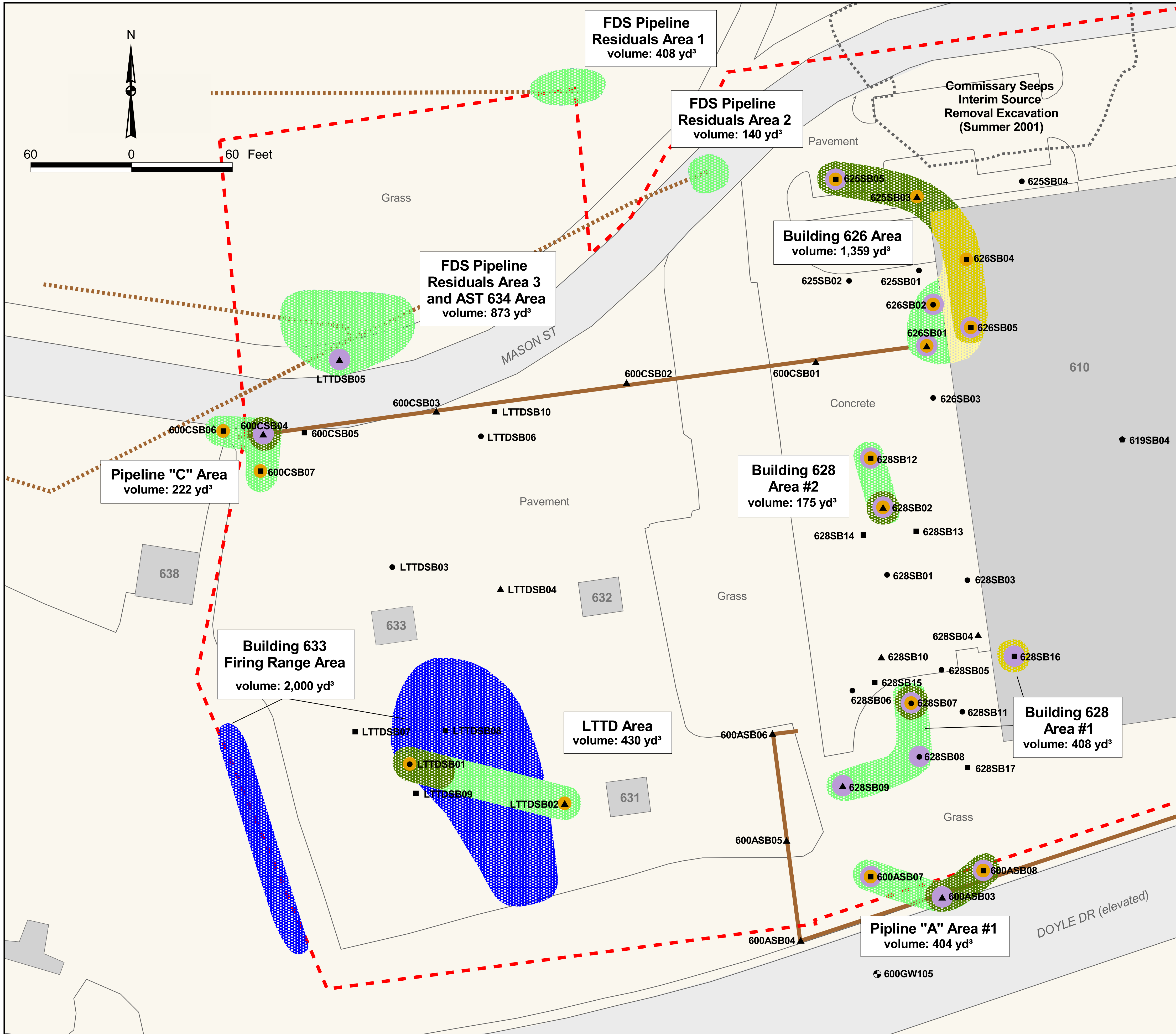
Treadwell&Rollo

Presidio Trust
34 Graham Street
P.O. Box 29052
San Francisco, CA
94129-0052
415/561-5300
fax 415/561-5315
July 2004

THE PRESIDIO TRUST

FIGURE 17

Treadwell & Rollo 2893_11COMMISSARYREG_DRAFT_CAP_072404.APR 07/2004



Treadwell & Rollo 2893_11\COMMISSARYREG_DRAFT_CAP_072404.APR 07/2004

DRAFT

LEGEND

- LTTDSB01 Phase 1 - Soil Sample Location
- 600ASB01 Phase 1 - Soil and Groundwater Grab Sample Location
- LTTDSB07 Phase 2 - Soil Sample Location
- 619SB04 Phase 2 - Soil and Groundwater Grab Sample Location
- 600GW105 Groundwater Monitoring Well Location
- Known or Suspected Fuel Distribution Pipeline
- Removed Fuel Distribution Pipeline
- Study Area Boundary
- PAH Exceedance in Soil Samples
- TPH Exceedance in Soil Samples
- Approximate Extent of Accessible Shallow Impacted Soil (0-3 feet)
- Approximate Extent of Accessible Deep Impacted Soil (0-10 feet)
- Approximate Extent of Less Accessible Shallow Impacted Soil (0-3 feet)
- Approximate Extent of Less Accessible Deep Impacted Soil (0-10 feet)
- Approximate Extent of Impacted Soil at CERCLA Sites
- 610 Existing Structure and Identification Number

Notes:
Selected Remedial Action for CERCLA Sites to be Presented in "Remedial Action Plan, Baker Beach Disturbed Areas 1, 1A, 2, and 2A and Twenty-Seven Other Sites, Presidio of San Francisco, California" MACTEC, 2004.

yd³ - cubic yards

Former distribution pipelines and former railroad tracks located outside of the Commissary/PX Study Area omitted for clarity.

Horizontal Datum: NAD 27, CA State Plane Coordinates, Zone 3, feet

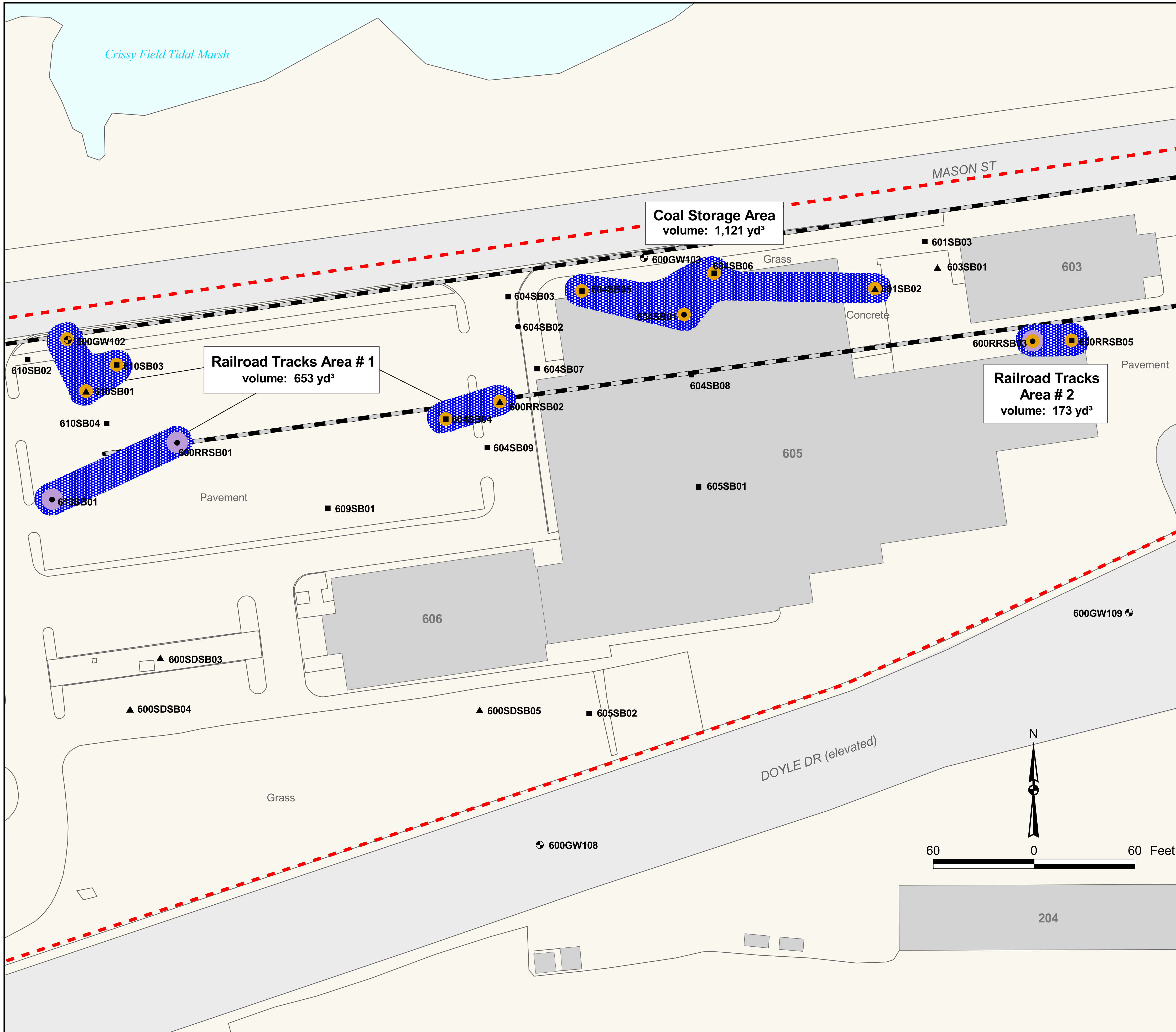
WESTERN SOIL REMEDIAL UNITS

Treadwell&Rollo

THE PRESIDIO TRUST

Presidio Trust
34 Graham Street
P.O. Box 29052
San Francisco, CA
94129-0052
415/561-5300
fax 415/561-5315
July 2004

FIGURE 18



DRAFT

LEGEND

- ● **LTTDSB01** Phase 1 - Soil Sample Location
- ▲ **600ASB01** Phase 1 - Soil and Groundwater Grab Sample Location
- ■ **LTTDSB07** Phase 2 - Soil Sample Location
- ⬟ **619SB04** Phase 2 - Soil and Groundwater Grab Sample Location
- **600GW105** Groundwater Monitoring Well Location
- Former Railroad Tracks
- Known or Suspected Fuel Distribution Pipeline
- Removed Fuel Distribution Pipeline
- Study Area Boundary
- PAH Exceedance in Soil Samples
- TPH Exceedance in Soil Samples
- Approximate Extent of Impacted Soil at CERCLA Sites
- 610 Existing Structure and Identification Number

Notes:
Selected Remedial Action for CERCLA Sites to be Presented in "Remedial Action Plan, Baker Beach Disturbed Areas 1, 1A, 2, and 2A and Twenty-Seven Other Sites, Presidio of San Francisco, California" MACTEC, 2004.

yd³ - cubic yards

Former distribution pipelines and former railroad tracks located outside of the Commissary/PX Study Area omitted for clarity.

Horizontal Datum: NAD 27, CA State Plane Coordinates, Zone 3, feet

EASTERN SOIL REMEDIAL UNITS

Treadwell&Rollo

THE PRESIDIO TRUST

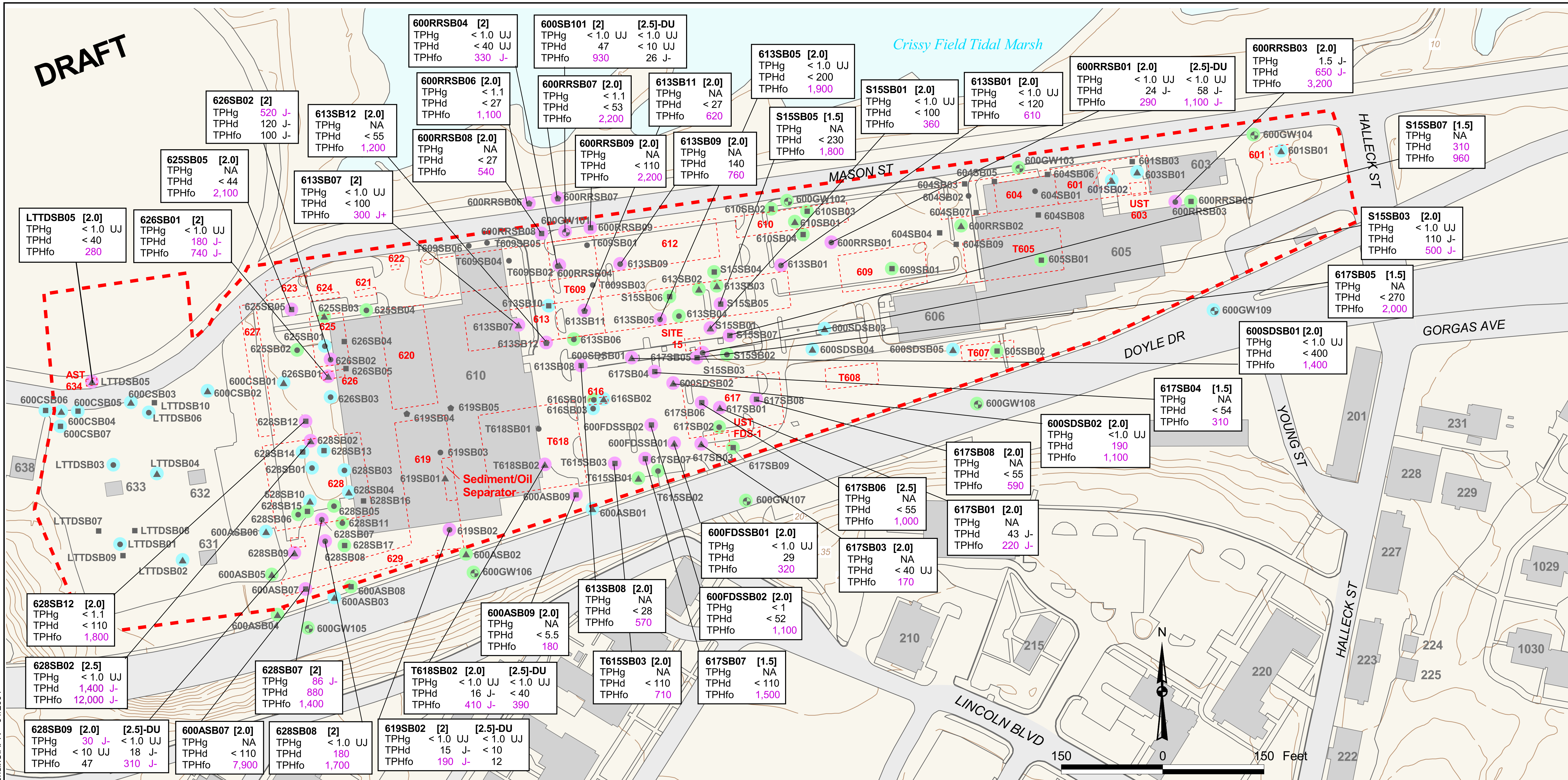
Presidio Trust
34 Graham Street
P.O. Box 29052
San Francisco, CA
94129-0052
415/561-5300
fax 415/561-5315
July 2004

FIGURE 19

Treadwell & Rollo 2893_11\COMMISSARYREG_DRAFT_CAP_072404.APR 07/2004

APPENDIX A
Response to Comments
(To be inserted in Final CAP)

APPENDIX B
Site Investigation Report Data Summary Figures



LEGEND

- LTTDSB01 Phase 1 - Soil Sample Location
- 600ASB01 Phase 1 - Soil and Groundwater Grab Sample Location
- LTTDSB07 Phase 2 - Soil Sample Location
- 619SB04 Phase 2 - Soil and Groundwater Grab Sample Location
- 600GW105 Groundwater Monitoring Well Location
- Study Area Boundary
- 5 Topographic Contour (Contour Interval : 5 Feet)
- Presidio Base Map
- 629 Former Motor Pool Structure and Identification Number
- 610 Existing Structure and Identification Number

[depth in feet]

T618SB02	[2.0]	[2.5]-DU
TPHg	<1.0 UJ	< 1.0 UJ
THPd	16 J-	< 40
TPHfo	410 J-	390

Duplicate Sample

Values in pink are above screening levels

Data Qualifiers

TPHg - Total Petroleum Hydrocarbons as Gasoline
TPHd - Total Petroleum Hydrocarbons as Diesel
TPHfo - Total Petroleum Hydrocarbons as Fuel Oil

Screening Levels:
TPHg - 11.6 mg/kg
TPHd - 144 mg/kg
TPHfo - 144 mg/kg

- Value above screening level
- Value below screening level
- Not detected

Notes:
Results reported in milligrams/kilogram (mg/kg).

Data qualifiers are presented in Table C-1.

Horizontal Datum: NAD 27, CA State Plane Coordinates, Zone 3, feet

TPH SCREENING LEVEL EXCEEDANCES IN SHALLOW SOIL (0 - 3 FEET)

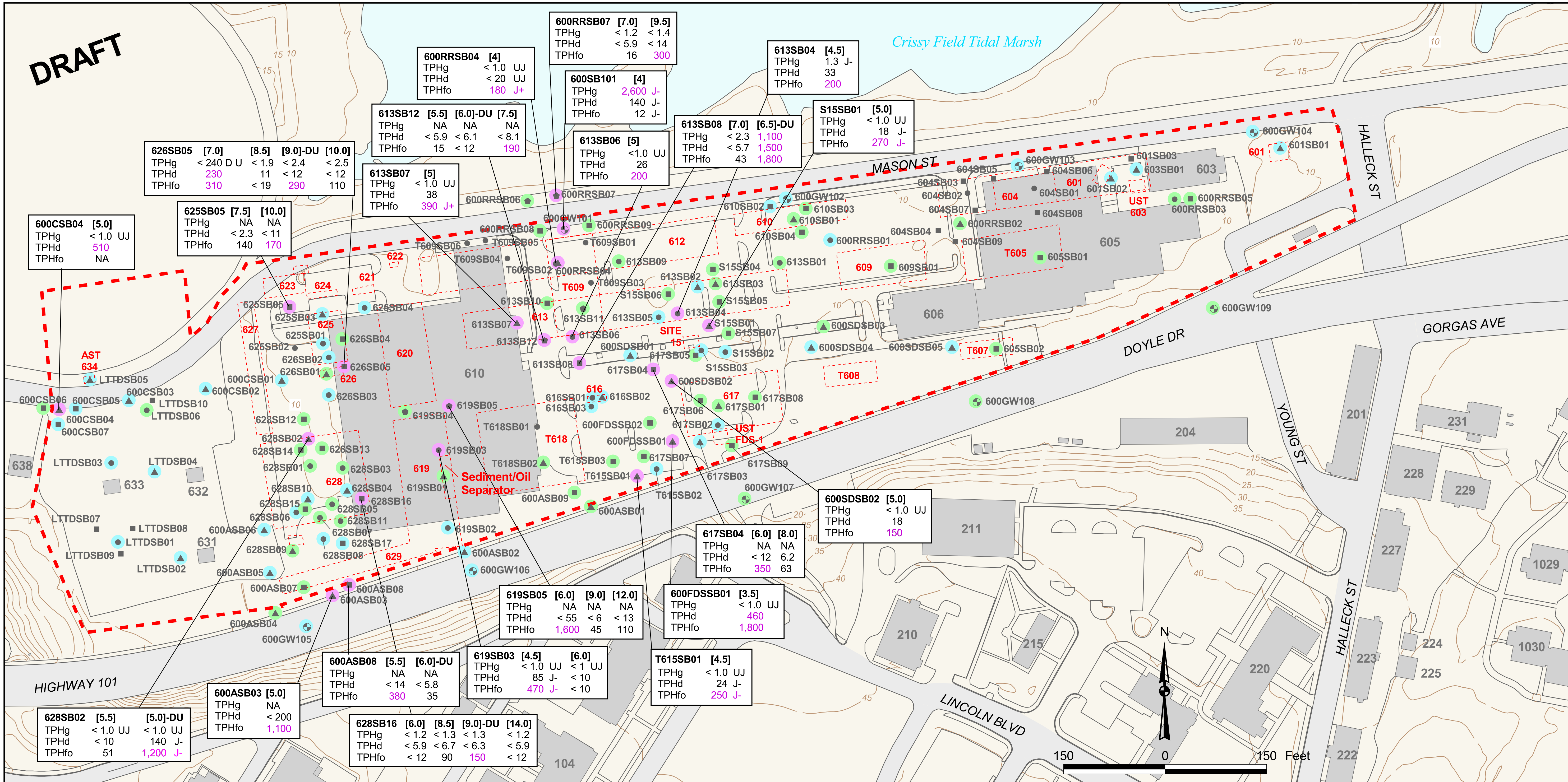
Treadwell&Rollo

THE PRESIDIO TRUST

Presidio Trust
34 Graham Street
P.O. Box 29052
San Francisco, CA
94129-0052
415/561-5300
fax 415/561-5315
July 2004

FIGURE B-1

Treadwell & Rollo 2893_11\COMMISSARY\CommPX_CAP_AppendixC.APR 01/2004



Treadwell & Rollo 2893_11\COMMISSARY\CommPX_CAP_AppendixC.APR 01/2004

LEGEND

- ● LTTDSB01 Phase 1 - Soil Sample Location
- ▲ 600ASB01 Phase 1 - Soil and Groundwater Grab Sample Location
- ■ LTTDSB07 Phase 2 - Soil Sample Location
- ⬟ 619SB04 Phase 2 - Soil and Groundwater Grab Sample Location
- 600GW105 Groundwater Monitoring Well Location
- Study Area Boundary
- 5 Topographic Contour (Contour Interval : 5 Feet)
- Presidio Base Map
- 629 Former Motor Pool Structure and Identification Number
- 610 Existing Structure and Identification Number

[depth in feet]

628SB02	[5.5]	[5.0]-DU
TPHg	<1.0 UJ	< 1.0 UJ
THPd	< 10	140 J-
TPHfo	51	1,200 J-

Duplicate Sample

Data Qualifiers

Values in pink are above screening levels

TPHg - Total Petroleum Hydrocarbons as Gasoline
TPHd - Total Petroleum Hydrocarbons as Diesel
TPHfo - Total Petroleum Hydrocarbons as Fuel Oil

Screening Levels:
TPHg - 11.6 mg/kg
TPHd - 144 mg/kg
TPHfo - 144 mg/kg

- Value above screening level
- Value below screening level
- Not detected

Notes:
Results reported in milligrams/kilogram (mg/kg).

Data qualifiers are presented in Table C-1.

Horizontal Datum: NAD 27, CA State Plane Coordinates, Zone 3, feet

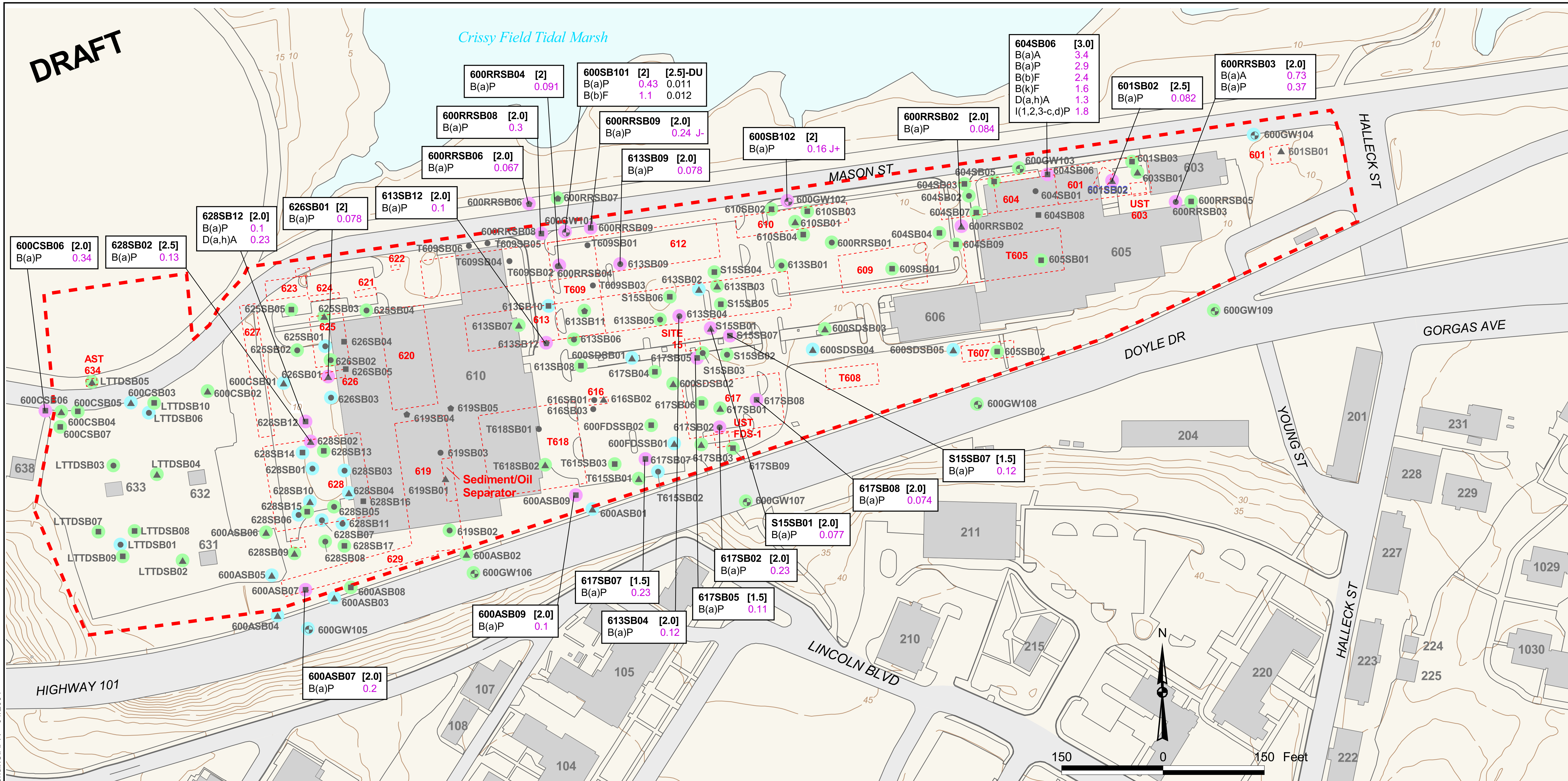
TPH SCREENING LEVEL EXCEEDANCES IN DEEP SOIL (> 3 FEET)

Treadwell&Rollo

THE PRESIDIO TRUST

Presidio Trust
34 Graham Street
P.O. Box 29052
San Francisco, CA
94129-0052
415/561-5300
fax 415/561-5315
July 2004

FIGURE B-2



LEGEND

- ● LTTDSB01 — Phase 1 - Soil Sample Location
- ▲ 600ASB01 — Phase 1 - Soil and Groundwater Grab Sample Location
- ■ LTTDSB07 — Phase 2 - Soil Sample Location
- ⬟ 619SB04 — Phase 2 - Soil and Groundwater Grab Sample Location
- 600GW105 — Groundwater Monitoring Well Location

- Study Area Boundary
- Topographic Contour (Contour Interval : 5 Feet)
- Presidio Base Map
- 629 — Former Motor Pool Structure and Identification Number
- 610 — Existing Structure and Identification Number

[depth in feet]

600SB101	[2]	[2]-DU
B(a)P	0.43	0.011
B(b)F	1.1	0.012

Duplicate Sample

Values in pink are above screening levels

B(a)A - Benzo(a)Anthracene
B(a)P - Benzo(a)Pyrene
B(b)F - Benzo(b)Fluoranthene
B(k)F - Benzo(k)Fluoranthene
D(a,h)A - Dibenz(a,h)Anthracene
I(1,2,3-c,d)P - Indeno(1,2,3-c,d)Pyrene

Screening Levels:
B(a)A - 0.65 mg/kg
B(a)P - 0.065 mg/kg
B(b)F - 0.65 mg/kg
B(k)F - 0.65 mg/kg
D(a,h)A - 0.19 mg/kg
I(1,2,3-c,d)P - 0.65 mg/kg

- Value above screening level
- Value below screening level
- Not detected

Notes:
Results reported in milligrams/kilogram (mg/kg).

Data qualifiers are presented in Table C-3.

Horizontal Datum: NAD 27, CA State Plane Coordinates, Zone 3, feet

PAH SCREENING LEVEL EXCEEDANCES IN SHALLOW SOIL (0 - 3 FEET)

Treadwell&Rollo

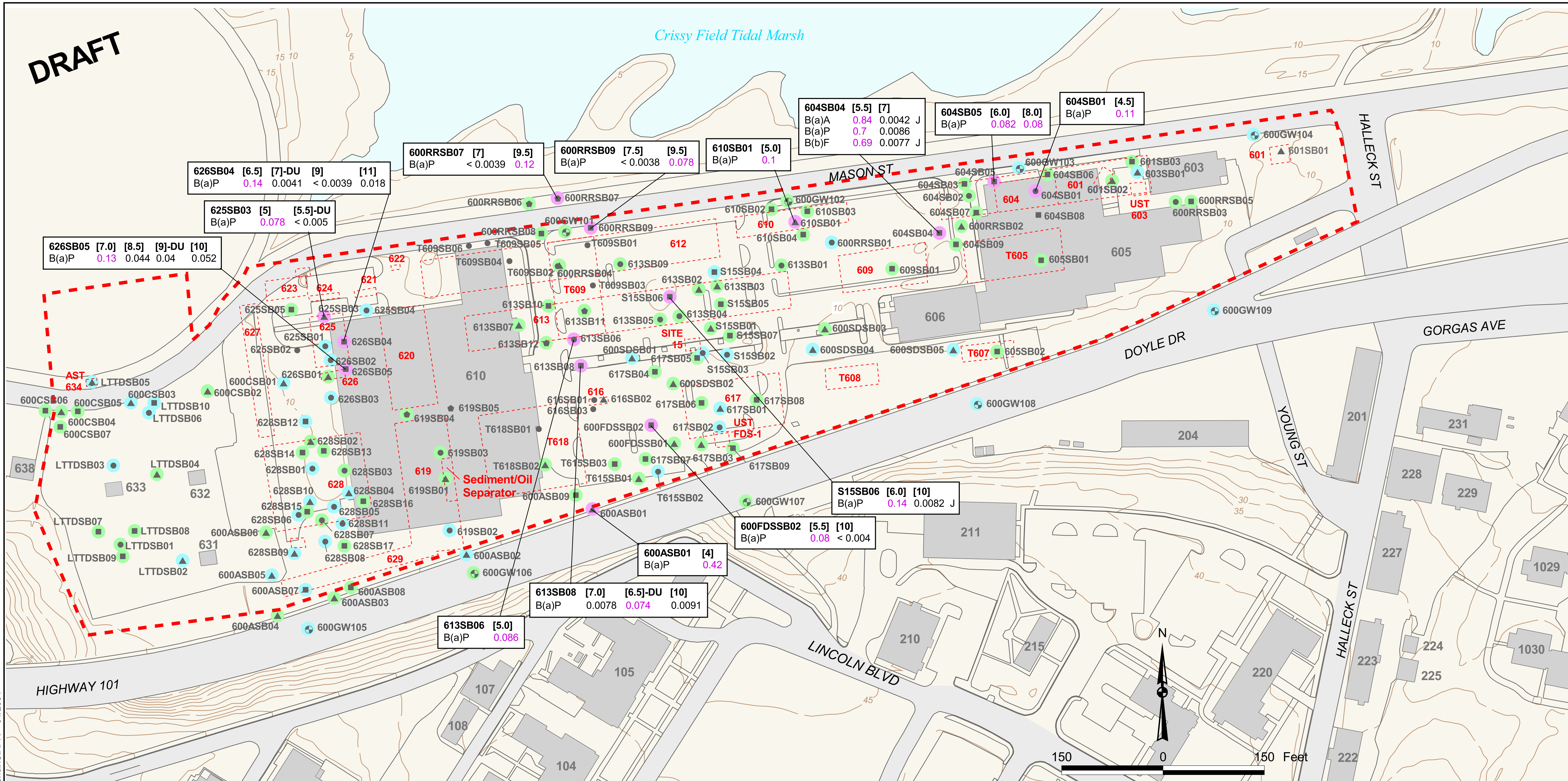
THE PRESIDIO TRUST

Presidio Trust
34 Graham Street
P.O. Box 29052
San Francisco, CA
94129-0052
415/561-5300
fax 415/561-5315

July 2004

FIGURE B-3

Treadwell & Rollo 2893_11\COMMISSARY\CommPX_CAP_AppendixC.APR 01/2004



LEGEND

● LTTDSB01	Phase 1 - Soil Sample Location	
▲ 600ASB01	Phase 1 - Soil and Groundwater Grab Sample Location	
■ LTTDSB07	Phase 2 - Soil Sample Location	
⬟ 619SB04	Phase 2 - Soil and Groundwater Grab Sample Location	
600GW105	Groundwater Monitoring Well Location	

- Study Area Boundary
- Topographic Contour (Contour Interval : 5 Feet)
- Presidio Base Map
- 629 — Former Motor Pool Structure and Identification Number
- 610 — Existing Structure and Identification Number

[depth in feet]

625SB03	[5]	[5.5]-DU
B(a)P	0.078	< 0.005

Duplicate Sample

Values in pink are above screening levels

B(a)A - Benzo(a)Anthracene
B(a)P - Benzo(a)Pyrene
B(b)F - Benzo(b)Fluoranthene

Screening Levels:
B(a)A - 0.65 mg/kg
B(a)P - 0.065 mg/kg
B(b)F - 0.65 mg/kg

- Value above screening level
- Value below screening level
- Not detected

Notes:
Results reported in milligrams/kilogram (mg/kg).

Data qualifiers are presented in Table C-3.

Horizontal Datum: NAD 27, CA State Plane Coordinates, Zone 3, feet

PAH SCREENING LEVEL EXCEEDANCES IN DEEP SOIL (> 3 FEET)

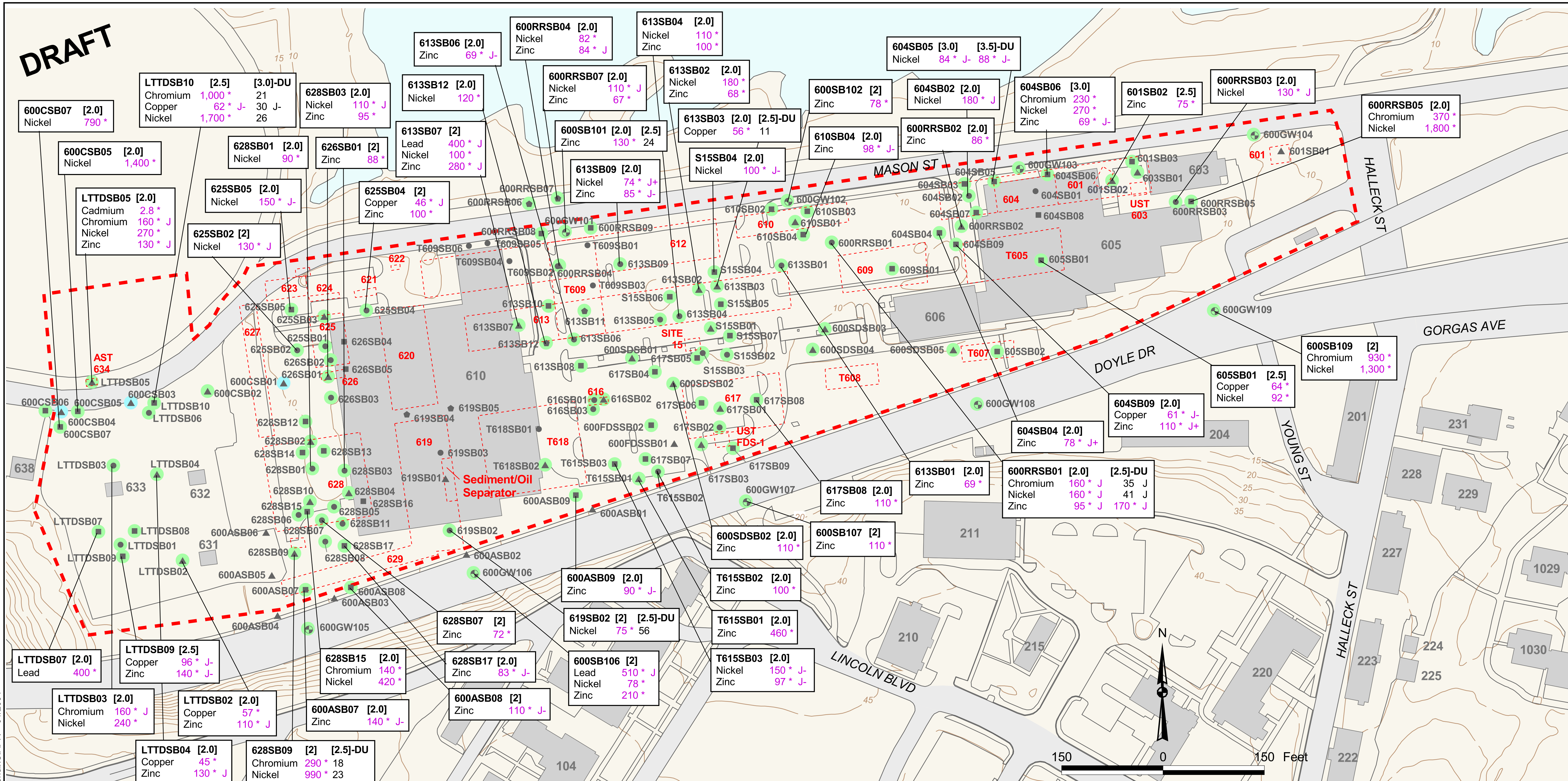
Treadwell&Rollo

THE PRESIDIO TRUST

Presidio Trust
34 Graham Street
P.O. Box 29052
San Francisco, CA
94129-0052
415/561-5300
fax 415/561-5315
July 2004

FIGURE B-4

Treadwell & Rollo 2893_11\COMMISSARY\CommPX_CAP_AppendixC.APR 01/2004



LEGEND

- ● LTTDSB01 Phase 1 - Soil Sample Location
- ▲ 600ASB01 Phase 1 - Soil and Groundwater Grab Sample Location
- ■ LTTDSB07 Phase 2 - Soil Sample Location
- ⬟ 619SB04 Phase 2 - Soil and Groundwater Grab Sample Location
- 600GW105 Groundwater Monitoring Well Location
- Study Area Boundary
- Topographic Contour (Contour Interval : 5 Feet)
- Presidio Base Map
- 629 Former Motor Pool Structure and Identification Number
- 610 Existing Structure and Identification Number

[depth in feet]

613SB03	[2.0]	[2.5]-DU
Copper	56 *	11

Duplicate Sample

Values in pink are above screening levels

Refer to Notes

Screening Levels:

Cadmium	1.7
Chromium	120
Copper	43
Lead	300
Nickel	71
Zinc	66

- Value detected
- Not detected

Notes:
Results reported in milligrams/kilogram (mg/kg).

* Correlation coefficient and 95% Upper Confidence Limit (UCL) analysis for cadmium, chromium, copper, lead, nickel, and zinc indicate exceedances are not likely due to releases from Motor Pool activities (Treadwell & Rollo, 2003c) .

Data qualifiers are presented in Table C-5.

Horizontal Datum: NAD 27, CA State Plane Coordinates, Zone 3, feet

METAL SCREENING LEVEL EXCEEDANCES IN SHALLOW SOIL (0 - 3 FEET)

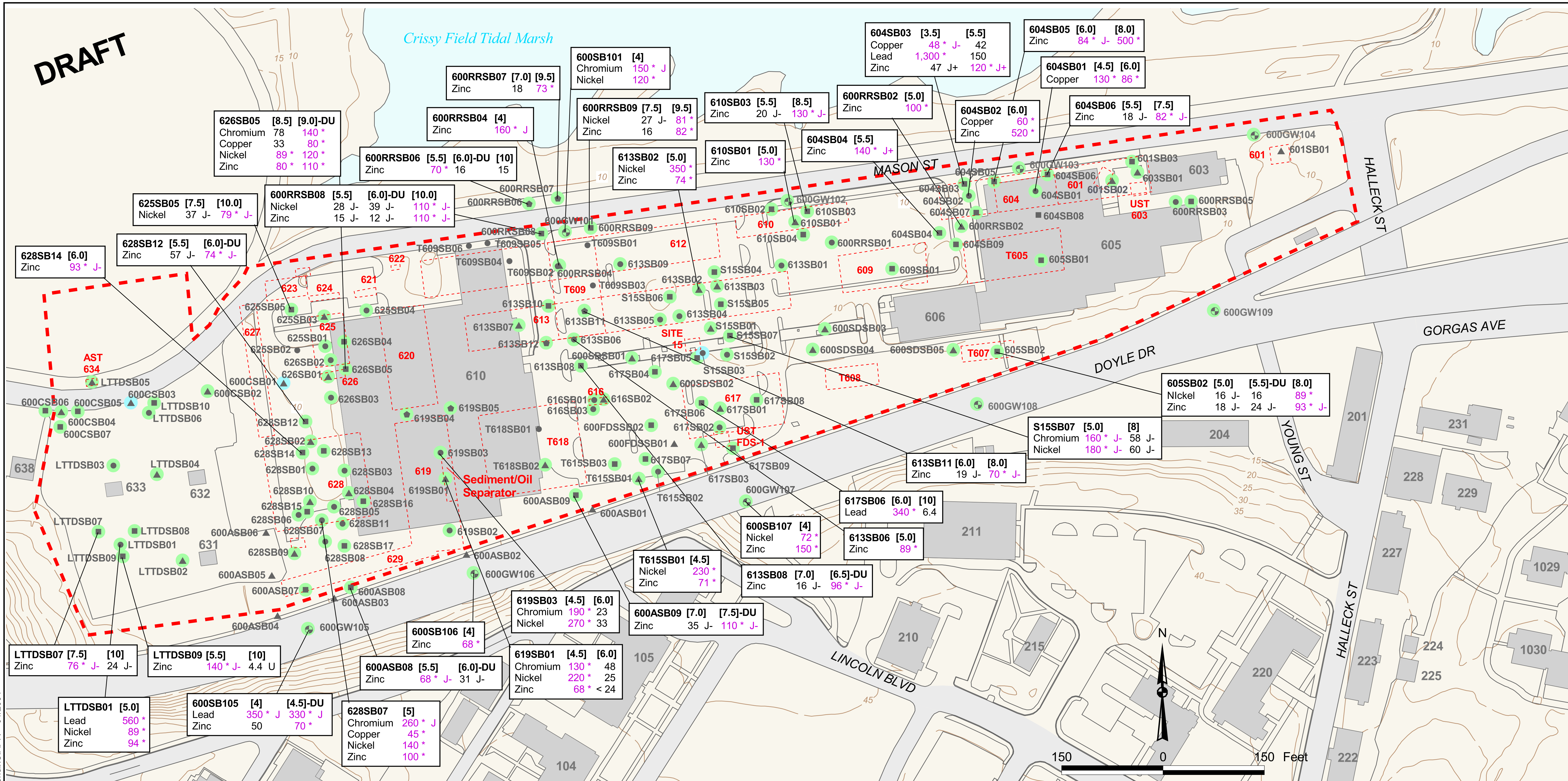
Treadwell&Rollo

THE PRESIDIO TRUST

Presidio Trust
34 Graham Street
P.O. Box 29052
San Francisco, CA
94129-0052
415/561-5300
fax 415/561-5315
July 2004

FIGURE B-5

Treadwell & Rollo 2893_11\COMMISSARY\CommPX_CAP_AppendixC.APR 01/2004



Treadwell & Rollo 2893_11\COMMISSARY\CommPX_CAP_AppendixC.APR 01/2004

LEGEND

● LTTDSB01	Phase 1 - Soil Sample Location	
▲ 600ASB01	Phase 1 - Soil and Groundwater Grab Sample Location	
■ LTTDSB07	Phase 2 - Soil Sample Location	
⬟ 619SB04	Phase 2 - Soil and Groundwater Grab Sample Location	
600GW105	Groundwater Monitoring Well Location	

- Study Area Boundary
- Topographic Contour (Contour Interval : 5 Feet)
- Presidio Base Map
- 629 — Former Motor Pool Structure and Identification Number
- 610 — Existing Structure and Identification Number

[depth in feet]

600ASB09 [7.0] [7.5]-DU — Duplicate Sample
Zinc 35 J- 110 * J- — Data Qualifier

Values in pink are above screening levels — Refer to Notes

Screening Levels:

Chromium	120
Copper	43
Lead	300
Nickel	71
Zinc	66

- Value detected
- Not detected

Notes:
Results reported in milligrams/kilogram (mg/kg).

* Correlation coefficient and 95% Upper Confidence Limit (UCL) analysis for cadmium, chromium, copper, lead, nickel, and zinc indicate exceedances are not likely due to releases from Motor Pool activities (Treadwell & Rollo, 2003c).

Data qualifiers are presented in Table C-5.

Horizontal Datum: NAD 27, CA State Plane Coordinates, Zone 3, feet

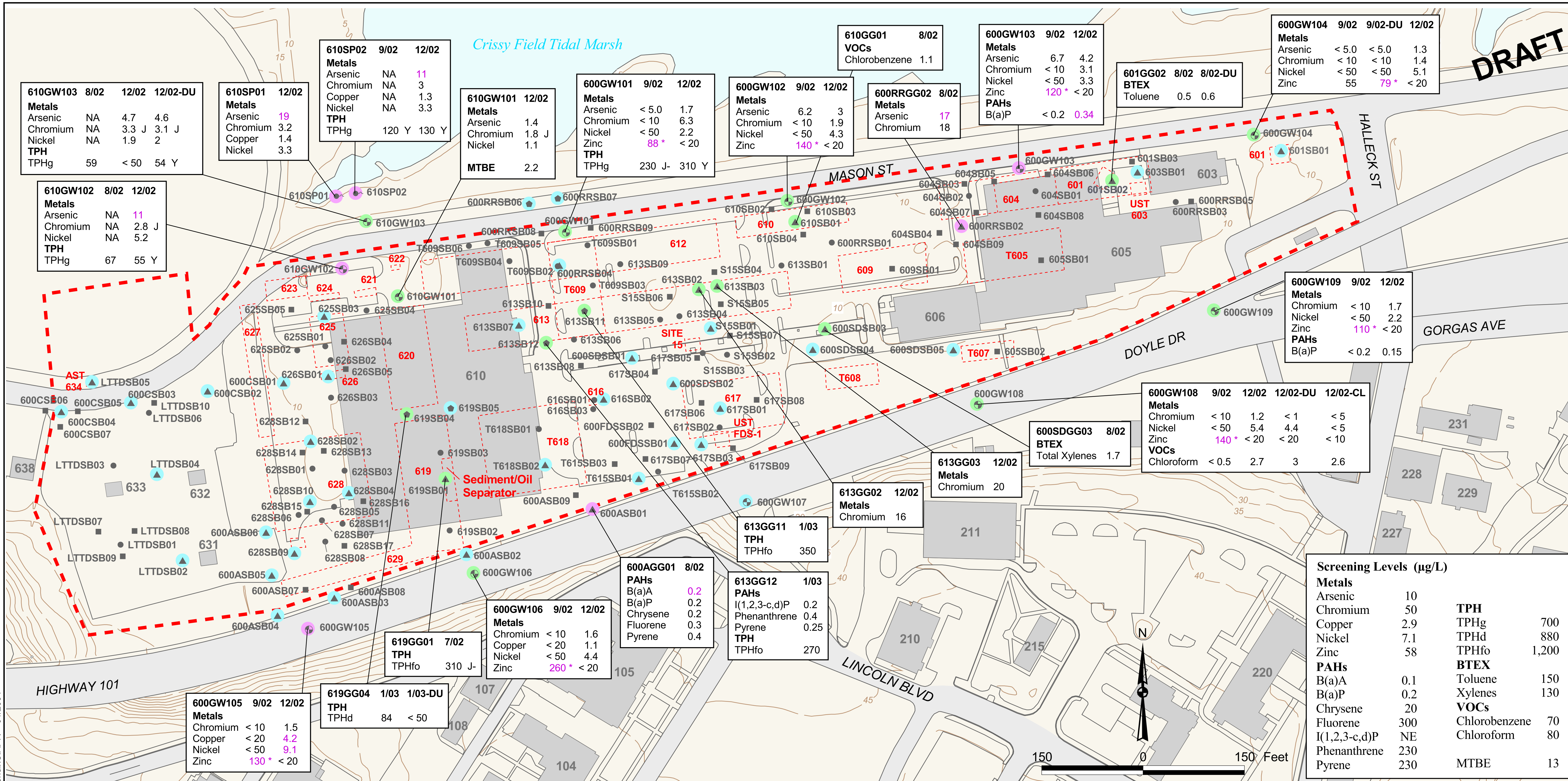
METAL SCREENING LEVEL EXCEEDANCES IN DEEP SOIL (> 3 FEET)

Treadwell&Rollo

THE PRESIDIO TRUST

Presidio Trust
34 Graham Street
P.O. Box 29052
San Francisco, CA
94129-0052
415/561-5300
fax 415/561-5315
July 2004

FIGURE B-6



LEGEND

- ● LTTDSB01 — Phase 1 - Soil Sample Location
- ▲ 600ASB01 — Phase 1 - Soil and Groundwater Grab Sample Location
- ■ LTTDSB07 — Phase 2 - Soil Sample Location
- ⬟ 619SB04 — Phase 2 - Soil and Groundwater Grab Sample Location
- 600GW105 — Groundwater Monitoring Well Location
- 610SP01 — Seep Sample Location
- Study Area Boundary
- Topographic Contour (Contour Interval : 5 Feet)
- Presidio Base Map
- 629 — Former Motor Pool Structure and Identification Number
- 610 — Existing Structure and Identification Number

Sample Date

600GW104	9/02	9/02-DU	12/02
Metals			
Arsenic	< 5.0	< 5.0	1.3
Chromium	< 10	< 10	1.4
Nickel	< 50	< 50	5.1
Zinc	55	79 *	< 20

Duplicate Sample

Refer to Notes

Values in pink are above screening levels

Abbreviated Analytes
B(a)A - Benzo(a)Anthracene
B(a)P - Benzo(a)Pyrene
I(1,2,3-c,d)P - Indeno (1,2,3-cd) Pyrene
TPHg - Total Petroleum Hydrocarbons as Gasoline
TPHd - Total Petroleum Hydrocarbons as Diesel
TPHfo - Total Petroleum Hydrocarbons as Fuel Oil

- Value above screening level - refer to chembox for specific analytes
- Value below screening level for all analytes
- No analytes detected

Notes:
Results reported in micrograms/liter (µg/L).

Additional Results for 610 wells and Data Qualifers are presented in Tables C-7 - C-11.

CL - Suffix denotes a Quality Control Duplicate Sample sent to a Control Lab.
NA - Not analyzed
NE - Not Established
* - Zinc exceedances due to filter type used by Blaine Tech in September 2002 (refer to Section 4.3.6 of the main text)

Horizontal Datum: NAD 27, CA State Plane Coordinates, Zone 3, feet

GROUNDWATER ANALYTICAL RESULTS AND EXCEEDANCES

Treadwell&Rollo

THE PRESIDIO TRUST

Presidio Trust
34 Graham Street
P.O. Box 29052
San Francisco, CA
94129-0052
415/561-5300
fax 415/561-5315
July 2004

FIGURE B-7

Treadwell & Rollo 2893_11\COMMISSARY\CommPX_CAP_AppendixC.APR 01/2004

APPENDIX C
Previous Soil and Groundwater Analytical Results

Table C-1
Summary of TPH, BTEX, and MTBE Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	Sample Date	Sample Depth (feet)	TPH As Gasoline (C_7-C_{12})	TPH As Diesel (C_{12}-C_{24})	TPH As Fuel Oil (C_{24}-C_{36})	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
		Analytical Method	GC/MS Comb SW8015M	GC/MS Comb SW8015M	GC/MS Comb SW8015M	SW8260B	SW8260B	SW8260B	SW8260B	SW8260B
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Cleanup Level[1]			**11.6**	**144**	**144**	**0.6**	**260**	**5**	**22**	**190**
601SB01[2]	08/06/02	2	< 1 UJ	NA	NA	< 0.005	< 0.01	< 0.005	< 0.01	< 0.005
601SB01[4]	08/06/02	4	< 1 UJ	NA	NA	< 0.005	< 0.01	< 0.005	< 0.01	< 0.005
601SB02[2.5]	08/05/02	2.5	< 1 UJ	NA	NA	< 0.005	< 0.01	< 0.005 UJ	< 0.01 UJ	< 0.005
601SB02[4.5]	08/05/02	4.5	< 1 UJ	NA	NA	< 0.005	< 0.01	< 0.005	< 0.01 UJ	< 0.005
603SB01[2.0]	08/05/02	2	< 1 UJ	< 10 UJ	NA	< 0.005	< 0.01	< 0.005 UJ	< 0.01 UJ	< 0.005
603SB01[5.0]	08/05/02	5	< 1 UJ	< 10 UJ	NA	< 0.005	< 0.01	< 0.005	< 0.01	< 0.005
605SB01[2.5]	01/22/03	2.5	< 1.1	< 5.5	72	NA	NA	NA	NA	NA
605SB01[5.0]	01/22/03	5	< 1.2	< 6	< 12	NA	NA	NA	NA	NA
605SB01[10.0]	01/22/03	10	< 1.2	< 5.8	< 12	< 0.0058	< 0.0058	< 0.0058	< 0.0058	< 0.0058
605SB02[2.0]	01/16/03	2	< 1.1	< 5.5	76	NA	NA	NA	NA	NA
605SB02[5.0]	01/16/03	5	< 1.1	< 5.6	< 11	NA	NA	NA	NA	NA
DUP011603B[MSD]	01/16/03	5.5	< 1.2	< 5.9	< 12	NA	NA	NA	NA	NA
605SB02[8.0]	01/16/03	8	< 2.1	< 11	87	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011
609SB01[2.0]	01/14/03	2	< 1.1	< 1.1	26	NA	NA	NA	NA	NA
609SB01[4.0]	01/14/03	4	< 1.2	< 1.2	< 12	NA	NA	NA	NA	NA
609SB01[8.0]	01/14/03	8	< 1.7	< 1.7	< 17	< 0.0087	< 0.0087	< 0.0087	< 0.0087	< 0.0087
610SB01[2.0]	08/05/02	2	< 1 UJ	12 J-	71 J-	< 0.005	< 0.01	< 0.005 UJ	< 0.01 UJ	< 0.02
DUP080502E[MSD]	08/05/02	2.5	< 1 UJ	< 10 UJ	17 J-	< 0.005	< 0.01	< 0.005	< 0.01	< 0.02
610SB01[5.0]	08/05/02	5	< 1 UJ	< 10 UJ	46 J-	< 0.005	< 0.01	< 0.005 UJ	< 0.01 UJ	< 0.02
610SB02[2.0]	01/16/03	2	NA	< 5.8	14	NA	NA	NA	NA	NA
610SB02[5.0]	01/16/03	5	NA	< 5.5	< 11	NA	NA	NA	NA	NA
610SB02[7.5]	01/16/03	7.5	NA	< 6	< 12	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006
610SB03[2.0]	01/14/03	2	NA	< 2.2	140	NA	NA	NA	NA	NA

Table C-1
Summary of TPH, BTEX, and MTBE Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	**Sample Date**	**Sample Depth (feet)**	**TPH As Gasoline (C_7-C_{12})**	**TPH As Diesel (C_{12}-C_{24})**	**TPH As Fuel Oil (C_{24}-C_{36})**	**Benzene**	**Toluene**	**Ethylbenzene**	**Total Xylenes**	**MTBE**
		Analytical Method	GC/MS Comb SW8015M	GC/MS Comb SW8015M	GC/MS Comb SW8015M	SW8260B	SW8260B	SW8260B	SW8260B	SW8260B
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Cleanup Level[1]			**11.6**	**144**	**144**	**0.6**	**260**	**5**	**22**	**190**
610SB03[5.5]	01/14/03	5.5	NA	< 2.2	82	NA	NA	NA	NA	NA
610SB03[8.5]	01/14/03	8.5	NA	< 1.4	80	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007
610SB04[2.0]	01/14/03	2	NA	< 5.8	30	NA	NA	NA	NA	NA
610SB04[6.0]	01/14/03	6	NA	6.9	30	NA	NA	NA	NA	NA
610SB04[7.5]	01/14/03	7.5	NA	< 6.2	130	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
613SB01[2.0]	08/02/02	2	< 1 UJ	< 120	**610**	< 0.005	< 0.01	< 0.005	< 0.01	< 0.02
613SB01[5.0]	08/02/02	5	< 1 UJ	< 10	11	< 0.005	< 0.01	< 0.005	< 0.01	< 0.02
613SB02[2.0]	08/02/02	2	< 1 UJ	< 10	12	< 0.005	< 0.01	< 0.005	< 0.01	< 0.02
613SB02[5.0]	08/02/02	5	< 1 UJ	< 10	< 10	< 0.005	< 0.01	< 0.005 UJ	< 0.01 UJ	< 0.02
613SB03[2.0]	08/02/02	2	< 1 UJ	< 10	< 10	< 0.005	< 0.01	< 0.005	< 0.01	< 0.02
DUP080202C	08/02/02	2.5	< 1 UJ	11	39	< 0.005	< 0.01	< 0.005	< 0.01	< 0.02
613SB03[5.0]	08/02/02	5	< 1 UJ	< 10	31	< 0.005	< 0.01	< 0.005	< 0.01	< 0.02
613SB04[2.0]	08/02/02	2	< 1 UJ	< 10	37	< 0.005	< 0.01	< 0.005 UJ	< 0.01 UJ	< 0.02
613SB04[4.5]	08/02/02	4.5	1.3 J-	33	**200**	< 0.005 UJ	< 0.01 UJ	< 0.005 UJ	< 0.01 UJ	< 0.02 UJ
613SB05[2.0]	08/02/02	2	< 1 UJ	< 200	**1,900**	< 0.005	< 0.01	< 0.005 UJ	< 0.01 UJ	< 0.02 UJ
613SB05[4.0]	08/02/02	4	< 1 UJ	< 10	< 10	< 0.005	< 0.01	< 0.005	< 0.01	< 0.02
613SB06[2.0]	08/02/02	2	< 1 UJ	< 10	30	< 0.005	< 0.01	< 0.005	< 0.01	< 0.02
613SB06[5.0]	08/02/02	5	< 1 UJ	26	**200**	< 0.005	< 0.01	< 0.005 UJ	< 0.01 UJ	< 0.02
613SB07[2]	07/30/02	2	< 1 UJ	< 100	**300 J+**	< 0.005	< 0.01	< 0.005	< 0.01 UJ	< 0.02
613SB07[5]	07/30/02	5	< 1 UJ	38	**390 J+**	< 0.005	< 0.01	< 0.005	< 0.01 UJ	< 0.02
613SB08[2.0]	01/21/03	2	NA	< 28	**570**	NA	NA	NA	NA	NA
613SB08[7.0]	01/21/03	7	< 2.3	< 5.7	43	< 0.028	< 0.028	< 0.028	< 0.028	< 0.028
DUP012103A[MSD]	01/21/03	6.5	**1,100**	**1,500**	**1,800**	**< 5.7**	< 5.7	< 5.7	< 5.7	< 5.7

Table C-1
Summary of TPH, BTEX, and MTBE Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	**Sample Date**	**Sample Depth (feet)**	**TPH As Gasoline (C_7-C_{12})**	**TPH As Diesel (C_{12}-C_{24})**	**TPH As Fuel Oil (C_{24}-C_{36})**	**Benzene**	**Toluene**	**Ethylbenzene**	**Total Xylenes**	**MTBE**
		Analytical Method	GC/MS Comb SW8015M	GC/MS Comb SW8015M	GC/MS Comb SW8015M	SW8260B	SW8260B	SW8260B	SW8260B	SW8260B
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Cleanup Level[1]			**11.6**	**144**	**144**	**0.6**	**260**	**5**	**22**	**190**
613SB08[10.0]	01/21/03	10	< 1.2	< 6	19	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006
613SB09[2.0][MSD]	01/17/03	2	NA	140	**760**	NA	NA	NA	NA	NA
613SB09[5.5]	01/17/03	5.5	NA	< 5.8	< 12	NA	NA	NA	NA	NA
613SB09[7.5]	01/17/03	7.5	NA	< 7.5	38	NA	NA	NA	NA	NA
613SB10[2.5]	01/22/03	2.5	NA	< 5.7	< 11	NA	NA	NA	NA	NA
613SB10[5.5]	01/22/03	5.5	NA	< 6	13	NA	NA	NA	NA	NA
DUP012203A	01/22/03	6	NA	< 5.9	67	NA	NA	NA	NA	NA
613SB10[7.5]	01/22/03	7.5	NA	< 6.4	60	NA	NA	NA	NA	NA
613SB11[2.0]	01/21/03	2	NA	< 27	**620**	NA	NA	NA	NA	NA
613SB11[6.0]	01/21/03	6	NA	< 5.7	< 11	NA	NA	NA	NA	NA
613SB11[8.0]	01/21/03	8	NA	< 7.2	27	NA	NA	NA	NA	NA
613SB12[2.0]	01/21/03	2	NA	< 55	**1,200**	NA	NA	NA	NA	NA
613SB12[5.5]	01/21/03	5.5	NA	< 5.9	15	NA	NA	NA	NA	NA
DUP012103C[MSD]	01/21/03	6	NA	< 6.1	< 12	NA	NA	NA	NA	NA
613SB12[7.5][MSD]	01/21/03	7.5	NA	< 8.1	**190**	NA	NA	NA	NA	NA
616SB01[2.0]	07/30/02	2	1.1 J-	NA	NA	< 0.005	< 0.01	< 0.005	< 0.01	NA
DUP073002D(MSD)	07/30/02	1.5	< 1 UJ	NA	NA	< 0.005	< 0.01	< 0.005	< 0.01	NA
616SB01[4.0]	07/30/02	4	< 1 UJ	NA	NA	< 0.005	< 0.01	< 0.005	< 0.01	NA
616SB02[2.0]	07/30/02	2	< 1 UJ	NA	NA	< 0.005	< 0.01	< 0.005	< 0.01	NA
616SB02[5.0]	07/30/02	5	< 1 UJ	NA	NA	< 0.005	< 0.01	< 0.005	< 0.01	NA
616SB03[2.0]	07/30/02	2	< 1 UJ	NA	NA	< 0.005	< 0.01	< 0.005	< 0.01	NA
616SB03[5.0]	07/30/02	5	< 1 UJ	NA	NA	< 0.005	< 0.01	< 0.005	< 0.01	NA
617SB01[2.0]	08/01/02	2	NA	43 J-	**220 J-**	< 0.005	< 0.01	< 0.005	< 0.01	NA

Table C-1
Summary of TPH, BTEX, and MTBE Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	Sample Date	Sample Depth (feet)	TPH As Gasoline (C_7-C_{12})	TPH As Diesel (C_{12}-C_{24})	TPH As Fuel Oil (C_{24}-C_{36})	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
		Analytical Method	GC/MS Comb SW8015M	GC/MS Comb SW8015M	GC/MS Comb SW8015M	SW8260B	SW8260B	SW8260B	SW8260B	SW8260B
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Cleanup Level[1]			**11.6**	**144**	**144**	**0.6**	**260**	**5**	**22**	**190**
617SB01[5.0]	08/01/02	5	NA	< 10 UJ	11 J-	< 0.005	< 0.01	< 0.005 UJ	< 0.01 UJ	NA
617SB02[2.0]	07/31/02	2	NA	< 40 UJ	140 J-	< 0.005	< 0.01	< 0.005 UJ	< 0.01 UJ	NA
617SB02[5.0]	07/31/02	5	NA	< 10 UJ	< 10 UJ	< 0.005	< 0.01	< 0.005 UJ	< 0.01 UJ	NA
617SB03[2.0]	08/01/02	2	NA	< 40 UJ	**170**	< 0.005	< 0.01	< 0.005	< 0.01	NA
617SB03[5.0]	08/01/02	5	NA	< 10 UJ	< 10 UJ	< 0.005	< 0.01	< 0.005 UJ	< 0.01 UJ	NA
617SB04[1.5]	01/15/03	1.5	NA	< 54	**310**	NA	NA	NA	NA	NA
617SB04[6.0]	01/15/03	6	NA	< 12	**350**	NA	NA	NA	NA	NA
617SB04[8.0]	01/15/03	8	NA	6.2	63	NA	NA	NA	NA	NA
617SB05[1.5]	01/15/03	1.5	NA	< 270	**2,000**	NA	NA	NA	NA	NA
617SB05[4.0]	01/15/03	4	NA	49	130	NA	NA	NA	NA	NA
617SB05[7.5]	01/15/03	7.5	NA	< 11	140	NA	NA	NA	NA	NA
617SB06[2.5]	01/15/03	2.5	NA	< 55	**1,000**	NA	NA	NA	NA	NA
617SB06[6.0]	01/15/03	6	NA	< 6.9	14	NA	NA	NA	NA	NA
617SB06[10.0]	01/15/03	10	NA	< 5.9	< 12	NA	NA	NA	NA	NA
617SB07[1.5]	01/15/03	1.5	NA	< 110	**1,500**	NA	NA	NA	NA	NA
617SB07[5.5]	01/15/03	5.5	NA	< 7.1	71	NA	NA	NA	NA	NA
617SB07[9.0]	01/15/03	9	NA	< 6.2	40	NA	NA	NA	NA	NA
617SB08[2.0]	01/15/03	2	NA	< 55	**590**	NA	NA	NA	NA	NA
617SB08[5.5]	01/15/03	5.5	NA	< 5.7	< 11	NA	NA	NA	NA	NA
617SB08[10.0]	01/15/03	10	NA	< 5.7	30	NA	NA	NA	NA	NA
617SB09[2.0]	01/16/03	2	NA	< 5.4	23	NA	NA	NA	NA	NA
617SB09[5.5]	01/16/03	5.5	NA	16	43	NA	NA	NA	NA	NA
617SB09[10.0]	01/16/03	10	NA	< 6.1	22	NA	NA	NA	NA	NA

Table C-1
Summary of TPH, BTEX, and MTBE Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	**Sample Date**	**Sample Depth (feet)**	**TPH As Gasoline (C_7-C_{12})**	**TPH As Diesel (C_{12}-C_{24})**	**TPH As Fuel Oil (C_{24}-C_{36})**	**Benzene**	**Toluene**	**Ethylbenzene**	**Total Xylenes**	**MTBE**
		Analytical Method	GC/MS Comb SW8015M	GC/MS Comb SW8015M	GC/MS Comb SW8015M	SW8260B	SW8260B	SW8260B	SW8260B	SW8260B
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Cleanup Level[1]			**11.6**	**144**	**144**	**0.6**	**260**	**5**	**22**	**190**
619SB01[4.5]	07/31/02	4.5	< 1 UJ	< 10	36	< 0.005	< 0.01	< 0.005	< 0.01	< 0.02
619SB01[6.0]	07/31/02	6	< 1 UJ	< 10	< 10	< 0.005	< 0.01	< 0.005 UJ	< 0.01 UJ	< 0.02
619SB02[2]	08/06/02	2	< 1 UJ	15 J-	**190 J-**	< 0.005	< 0.01	< 0.005	< 0.01	< 0.02
DUP080602D[MSD]	08/06/02	2.5	< 1 UJ	< 10	12	< 0.005	< 0.01	< 0.005	< 0.01	< 0.02
619SB02[5]	08/06/02	5	< 1 UJ	< 10	< 10	< 0.005	< 0.01	< 0.005	< 0.01	< 0.02
619SB03[4.5]	07/31/02	4.5	< 1 UJ	85 J-	**470 J-**	< 0.005	< 0.01	< 0.005	< 0.01 UJ	< 0.02
619SB03[6.0]	07/31/02	6	< 1 UJ	< 10	< 10	< 0.005	< 0.01	< 0.005	< 0.01	< 0.02
619SB04[7.0]	01/23/03	7	< 1.2	< 5.8	< 12	NA	NA	NA	NA	NA
619SB04[11.5]	01/23/03	11.5	< 1.7	< 8.4	46	NA	NA	NA	NA	NA
DUP012303A	01/23/03	12	< 1.2	< 6.2	< 12	NA	NA	NA	NA	NA
619SB04[13.0][MSD]	01/23/03	13	< 1.3	< 6.4	32	< 0.0064	< 0.0064	< 0.0064	< 0.0064	< 0.0064
619SB05[6.0]	01/23/03	6	NA	< 55	**1,600**	NA	NA	NA	NA	NA
619SB05[9.0]	01/23/03	9	NA	< 6	45	NA	NA	NA	NA	NA
619SB05[12.0]	01/23/03	12	NA	< 13	110	NA	NA	NA	NA	NA
625SB01[2]	07/29/02	2	< 1 UJ	< 10	< 10	< 0.005	< 0.01	< 0.005	< 0.01 UJ	< 0.02
625SB01[4]	07/29/02	4	< 1 UJ	< 10	< 10	< 0.005	< 0.01	< 0.005	< 0.01 UJ	< 0.02
625SB02[2]	07/29/02	2	< 1 UJ	< 10	120	< 0.005	< 0.01	< 0.005	< 0.01 UJ	< 0.02
625SB03[2]	07/29/02	2	< 1 UJ	< 10	< 10	< 0.005	< 0.01	< 0.005	< 0.01 UJ	< 0.02
DUP072902A	07/29/02	2.5	< 1 UJ	< 10	17	< 0.005	< 0.01	< 0.005	< 0.01 UJ	< 0.02
625SB03[5]	07/29/02	5	< 1 UJ	< 10	< 10	< 0.005	< 0.01	< 0.005	< 0.01 UJ	< 0.02
DUP072902B	07/29/02	5.5	< 1 UJ	< 10	< 10	< 0.005	< 0.01	< 0.005	< 0.01 UJ	< 0.02
625SB04[2]	07/29/02	2	< 1 UJ	< 10	45	< 0.005	< 0.01	< 0.005 UJ	< 0.01 UJ	< 0.02
625SB04[5]	07/29/02	5	< 1 UJ	< 10	< 10	< 0.005	< 0.01	< 0.005	< 0.01 UJ	< 0.02

Table C-1
Summary of TPH, BTEX, and MTBE Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	**Sample Date**	**Sample Depth (feet)**	**TPH As Gasoline (C_7-C_{12})**	**TPH As Diesel (C_{12}-C_{24})**	**TPH As Fuel Oil (C_{24}-C_{36})**	**Benzene**	**Toluene**	**Ethylbenzene**	**Total Xylenes**	**MTBE**
		Analytical Method	GC/MS Comb SW8015M	GC/MS Comb SW8015M	GC/MS Comb SW8015M	SW8260B	SW8260B	SW8260B	SW8260B	SW8260B
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Cleanup Level[1]			**11.6**	**144**	**144**	**0.6**	**260**	**5**	**22**	**190**
625SB05[2.0]	01/13/03	2	NA	< 44	**2,100**	NA	NA	NA	NA	NA
625SB05[7.5]	01/13/03	7.5	NA	< 2.3	140	NA	NA	NA	NA	NA
625SB05[10.0]	01/13/03	10	NA	< 11	**170**	NA	NA	NA	NA	NA
626SB01[2]	07/29/02	2	< 1 UJ	**180 J-**	**740 J-**	< 0.005	< 0.01	< 0.005	< 0.01	< 0.005
626SB01[4]	07/29/02	4	< 1 UJ	13	92	< 0.005	< 0.01	< 0.005	< 0.01	< 0.005
626SB02[2]	07/29/02	2	**520 J-**	120 J-	100 J-	< 0.2	< 0.4	< 0.2	< 0.4	< 0.2
626SB02[4]	07/29/02	4	< 1 UJ	< 10	< 10	< 0.005	< 0.01	< 0.005	< 0.01	< 0.005
626SB03[2]	07/29/02	2	< 1 UJ	< 10	< 10	< 0.005	< 0.01	< 0.005	< 0.01	< 0.005
626SB03[5]	07/29/02	5	< 1 UJ	< 10	< 10	< 0.005	< 0.01	< 0.005	< 0.01	< 0.005
626SB04[6.5]	01/23/03	6.5	< 1.2	< 5.8	69	NA	NA	NA	NA	NA
DUP012303C[MSD]	01/23/03	7	< 1.2	< 6.2	< 12	NA	NA	NA	NA	NA
626SB04[9.0]	01/23/03	9	< 1.2	< 5.9	< 12	NA	NA	NA	NA	NA
626SB04[11.0]	01/23/03	11	< 1.7	< 8.4	28	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084
626SB05[7.0]	01/23/03	7	< 240 D U	**230**	**310**	NA	NA	NA	NA	NA
626SB05[8.5]	01/23/03	8.5	< 1.9	11	< 19	< 0.0095	< 0.0095	< 0.0095	< 0.0095	< 0.0095
DUP012303E	01/23/03	9	< 2.4	< 12	**290**	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
626SB05[10.0]	01/23/03	10	< 2.5	< 12	110	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012
628SB01[2.0]	07/30/02	2	< 1 UJ	< 10	< 10	< 0.005	< 0.01	< 0.005	< 0.01 UJ	< 0.02
628SB01[5.0]	07/30/02	5	< 1 UJ	< 10	19	< 0.005	< 0.01	< 0.005	< 0.01 UJ	< 0.02
628SB02[2.5]	07/30/02	2.5	< 1 UJ	**1,400 J-**	**12,000 J-**	< 0.005	< 0.01	< 0.005	< 0.01 UJ	< 0.02
628SB02[5.5]	07/30/02	5.5	< 1 UJ	< 10	51	< 0.005	< 0.01	< 0.005	< 0.01 UJ	< 0.02
DUP073002A	07/30/02	5	< 1 UJ	140 J-	**1,200 J-**	< 0.005	< 0.01	< 0.005	< 0.01 UJ	< 0.02
628SB03[2.0]	07/30/02	2	< 1 UJ	< 10	< 10	< 0.005	< 0.01	< 0.005	< 0.01 UJ	< 0.02

Table C-1
Summary of TPH, BTEX, and MTBE Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	**Sample Date**	**Sample Depth (feet)**	**TPH As Gasoline (C_7-C_{12})**	**TPH As Diesel (C_{12}-C_{24})**	**TPH As Fuel Oil (C_{24}-C_{36})**	**Benzene**	**Toluene**	**Ethylbenzene**	**Total Xylenes**	**MTBE**
		Analytical Method	GC/MS Comb SW8015M	GC/MS Comb SW8015M	GC/MS Comb SW8015M	SW8260B	SW8260B	SW8260B	SW8260B	SW8260B
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Cleanup Level[1]			**11.6**	**144**	**144**	**0.6**	**260**	**5**	**22**	**190**
628SB03[4.5]	07/30/02	4.5	< 1 UJ	< 10	34	< 0.005	< 0.01	< 0.005	< 0.01 UJ	< 0.02
628SB04[2]	07/30/02	2	< 1 UJ	< 10	< 10	< 0.005	< 0.01	< 0.005	< 0.01 UJ	< 0.02
628SB04[5]	07/30/02	5	< 1 UJ	< 10	< 10	< 0.005	< 0.01	< 0.005	< 0.01 UJ	< 0.02
628SB05[2]	07/31/02	2	< 1 UJ	< 10	11	< 0.005	< 0.01	< 0.005	< 0.01 UJ	< 0.02
628SB05[5]	07/31/02	5	< 1 UJ	< 10	34	< 0.005	< 0.01	< 0.005	< 0.01 UJ	< 0.02
628SB06[2]	07/31/02	2	< 1 UJ	< 10	18	< 0.005 UJ	< 0.01	< 0.005 UJ	< 0.01 UJ	< 0.02
628SB06[4]	07/31/02	4	< 1 UJ	< 10 UJ	< 10 UJ	< 0.005	< 0.01	< 0.005	< 0.01	< 0.02
628SB07[2]	07/31/02	2	**86 J-**	**880**	**1,400**	< 0.2	< 0.4	< 0.2	< 0.4	< 0.8
628SB07[5]	07/31/02	5	< 1 UJ	< 10	19	< 0.005	< 0.01	< 0.005	< 0.01	< 0.02
628SB08[2]	07/31/02	2	< 1 UJ	**180**	**1,700**	< 0.005	< 0.01	< 0.005 UJ	< 0.01 UJ	< 0.02
628SB08[5]	07/31/02	5	< 1 UJ	< 10	< 10	< 0.005	< 0.01	< 0.005	< 0.01	< 0.02
628SB09[2]	08/02/02	2	**30 J-**	< 10 UJ	47	< 0.005	< 0.01	< 0.005	< 0.01	< 0.005
DUP080202A	08/02/02	2.5	< 1 UJ	18 J-	**310 J-**	< 0.005 UJ	< 0.01 UJ	< 0.005 UJ	< 0.01 UJ	< 0.005 UJ
628SB09[5]	08/02/02	5	< 1 UJ	< 10 UJ	16	< 0.005	< 0.01	< 0.005 UJ	< 0.01 UJ	0.008
628SB10[2.0]	07/30/02	2	< 1 UJ	< 10	< 10	< 0.005	< 0.01	< 0.005	< 0.01 UJ	< 0.02
628SB10[5.0]	07/30/02	5	< 1 UJ	< 10	< 10	< 0.005	< 0.01	< 0.005	< 0.01 UJ	< 0.02
628SB11[2]	07/31/02	2	< 1 UJ	40	110	< 0.005	< 0.01	< 0.005	< 0.01 UJ	< 0.02
DUP073102A(MSD)	07/31/02	2.5	< 1 UJ	< 10	34	< 0.005	< 0.01	< 0.005	< 0.01 UJ	< 0.02
628SB11[5]	07/31/02	5	< 1 UJ	< 10	32	< 0.005	< 0.01	< 0.005	< 0.01 UJ	< 0.02
628SB12[2.0]	01/17/03	2	< 1.1	< 110	**1,800**	NA	NA	NA	NA	NA
628SB12[5.5]	01/17/03	5.5	< 1.3	< 6.5	16	NA	NA	NA	NA	NA
DUP011703B[MSD]	01/17/03	6	< 1.3	< 6.5	< 13	NA	NA	NA	NA	NA
628SB12[10.0]	01/17/03	10	< 1.1	< 5.6	< 11	NA	NA	NA	NA	NA

Table C-1
Summary of TPH, BTEX, and MTBE Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	**Sample Date**	**Sample Depth (feet)**	**TPH As Gasoline (C_7-C_{12})**	**TPH As Diesel (C_{12}-C_{24})**	**TPH As Fuel Oil (C_{24}-C_{36})**	**Benzene**	**Toluene**	**Ethylbenzene**	**Total Xylenes**	**MTBE**
		Analytical Method	GC/MS Comb SW8015M	GC/MS Comb SW8015M	GC/MS Comb SW8015M	SW8260B	SW8260B	SW8260B	SW8260B	SW8260B
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Cleanup Level[1]			**11.6**	**144**	**144**	**0.6**	**260**	**5**	**22**	**190**
628SB13[2.0]	01/17/03	2	< 1.1	< 5.5	< 11	NA	NA	NA	NA	NA
628SB13[6.0]	01/17/03	6	< 1.2	< 6.1	< 12	NA	NA	NA	NA	NA
628SB13[10.0]	01/17/03	10	< 1.2	< 6.1	51	NA	NA	NA	NA	NA
628SB14[3.0]	01/17/03	3	< 1.2	< 5.8	< 12	NA	NA	NA	NA	NA
628SB14[6.0]	01/17/03	6	< 1.5	< 7.6	94	NA	NA	NA	NA	NA
628SB14[10.0]	01/17/03	10	< 1.2	< 5.8	< 12	NA	NA	NA	NA	NA
628SB15[2.0]	01/17/03	2	< 1.1	< 5.5	38	NA	NA	NA	NA	NA
628SB15[6.0]	01/17/03	6	< 1.3	< 6.3	34	NA	NA	NA	NA	NA
628SB15[9.5]	01/17/03	9.5	< 1.2	< 5.8	< 12	< 0.0058	< 0.0058	< 0.0058	< 0.0058	< 0.0058
DUP011703A	01/17/03	10	< 1.1	< 5.7	< 11	< 0.0057	< 0.0057	< 0.0057	< 0.0057	< 0.0057
628SB16[6.0]	01/23/03	6	< 1.2	< 5.9	< 12	NA	NA	NA	NA	NA
628SB16[8.5]	01/23/03	8.5	< 1.3	< 6.7	90	NA	NA	NA	NA	NA
DUP012303D	01/23/03	9	< 1.3	< 6.3	**150**	NA	NA	NA	NA	NA
628SB16[14.0]	01/23/03	4	< 1.2	< 5.9	< 12	< 0.0059	< 0.0059	< 0.0059	< 0.0059	< 0.0059
628SB17[2.0]	01/17/03	2	< 1.1	< 5.4	32	NA	NA	NA	NA	NA
628SB17[7.0]	01/17/03	7	< 1.2	< 5.8	< 12	NA	NA	NA	NA	NA
628SB17[10.0]	01/17/03	10	< 1.1	< 5.6	< 11	NA	NA	NA	NA	NA
T615SB01[2.0]	08/01/02	2	< 1 UJ	17 J-	79	< 0.005	< 0.01	< 0.005	< 0.01 UJ	< 0.02
T615SB01[4.5]	08/01/02	4.5	< 1 UJ	24 J-	**250 J-**	< 0.005	< 0.01	< 0.005 UJ	< 0.01 UJ	< 0.02
T615SB02[2.0]	07/31/02	2	< 1 UJ	< 10	10	< 0.005	< 0.01	< 0.005	< 0.01	< 0.02
T615SB02[5.0]	07/31/02	5	< 1 UJ	< 10	< 10	< 0.005	< 0.01	< 0.005 UJ	< 0.01 UJ	< 0.02
T615SB03[2.0]	01/15/03	2	NA	< 110	**710**	NA	NA	NA	NA	NA
T615SB03[6.0]	01/15/03	6	NA	< 7.5	29	NA	NA	NA	NA	NA

Table C-1
Summary of TPH, BTEX, and MTBE Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	**Sample Date**	**Sample Depth (feet)**	**TPH As Gasoline (C_7-C_{12})**	**TPH As Diesel (C_{12}-C_{24})**	**TPH As Fuel Oil (C_{24}-C_{36})**	**Benzene**	**Toluene**	**Ethylbenzene**	**Total Xylenes**	**MTBE**
		Analytical Method	GC/MS Comb SW8015M	GC/MS Comb SW8015M	GC/MS Comb SW8015M	SW8260B	SW8260B	SW8260B	SW8260B	SW8260B
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Cleanup Level[1]			**11.6**	**144**	**144**	**0.6**	**260**	**5**	**22**	**190**
T615SB03[10.0]	01/15/03	10	NA	< 5.9	< 12	NA	NA	NA	NA	NA
T618SB02[2.0]	08/06/02	2	< 1 UJ	16 J-	**410 J-**	< 0.005	< 0.01	< 0.005	< 0.01	< 0.02
DUP080602C	08/06/02	2.5	< 1 UJ	< 40	**390**	< 0.005	< 0.01	< 0.005	< 0.01	< 0.02
T618SB02[5.0]	08/06/02	5	< 1 UJ	< 10 UJ	28 J-	< 0.005	< 0.01	< 0.005	< 0.01	< 0.02
S15SB01[2.0]	08/06/02	2	< 1 UJ	< 100	**360**	< 0.005	< 0.01	< 0.005	< 0.01	< 0.005
S15SB01[5.0]	08/06/02	5	< 1 UJ	18 J-	**270 J-**	< 0.005	< 0.01	< 0.005	< 0.01	< 0.005
S15SB02[2.0]	08/01/02	2	< 1 UJ	17	44	< 0.005	< 0.01	< 0.005 UJ	< 0.01 UJ	< 0.005
S15SB02[4.0]	08/01/02	4	< 1 UJ	< 10	< 10	< 0.005	< 0.01	< 0.005	< 0.01	< 0.005
S15SB03[2.0]	08/06/02	2	< 1 UJ	110 J-	**500 J-**	< 0.005	< 0.01	< 0.005	< 0.01	< 0.005
S15SB03[5.0]	08/06/02	5	< 1 UJ	< 10 UJ	< 10 UJ	< 0.005	< 0.01	< 0.005	< 0.01	< 0.005
S15SB04[2.0]	01/14/03	2	NA	< 5.7	60	NA	NA	NA	NA	NA
S15SB04[5.5]	01/14/03	5.5	NA	< 5.8	18	NA	NA	NA	NA	NA
S15SB04[10.0]	01/14/03	10	NA	< 6	< 12	NA	NA	NA	NA	NA
S15SB05[1.5]	01/15/03	1.5	NA	< 230	**1,800**	NA	NA	NA	NA	NA
S15SB05[5.5]	01/15/03	5.5	NA	< 6	27	NA	NA	NA	NA	NA
DUP011503A	01/15/03	6	NA	< 6.5	< 13	NA	NA	NA	NA	NA
S15SB05[7.0]	01/15/03	7	NA	< 9.3	59	NA	NA	NA	NA	NA
DUP011503B	01/15/03	7.5	NA	< 9.8	94	NA	NA	NA	NA	NA
S15SB06[3.0]	01/16/03	3	NA	< 5.8	59	NA	NA	NA	NA	NA
S15SB06[6.0]	01/16/03	6	NA	< 7.4	42	NA	NA	NA	NA	NA
S15SB06[10.0]	01/16/03	10	NA	< 9.1	27	NA	NA	NA	NA	NA
S15SB07[1.5]	01/15/03	1.5	NA	**310**	**960**	NA	NA	NA	NA	NA
S15SB07[5.0]	01/15/03	5	NA	< 5.8	< 12	NA	NA	NA	NA	NA
S15SB07[8.0]	01/15/03	8	NA	< 7.8	100	NA	NA	NA	NA	NA

Table C-1
Summary of TPH, BTEX, and MTBE Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	**Sample Date**	**Sample Depth (feet)**	**TPH As Gasoline (C_7-C_{12})**	**TPH As Diesel (C_{12}-C_{24})**	**TPH As Fuel Oil (C_{24}-C_{36})**	**Benzene**	**Toluene**	**Ethylbenzene**	**Total Xylenes**	**MTBE**
		Analytical Method	GC/MS Comb SW8015M	GC/MS Comb SW8015M	GC/MS Comb SW8015M	SW8260B	SW8260B	SW8260B	SW8260B	SW8260B
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Cleanup Level[1]			**11.6**	**144**	**144**	**0.6**	**260**	**5**	**22**	**190**
600ASB01[2]MSD	08/07/02	2	NA	< 10	< 10	NA	NA	NA	NA	NA
DUP080702A[MSD]	08/07/02	2.5	NA	< 10	< 10	NA	NA	NA	NA	NA
600ASB01[4]MSD	08/07/02	4	NA	< 10	32	NA	NA	NA	NA	NA
600ASB02[2]	08/01/02	2	NA	< 10 UJ	22 J-	NA	NA	NA	NA	NA
600ASB02[4]	08/01/02	4	NA	< 10 UJ	< 10	NA	NA	NA	NA	NA
600ASB03[2.0]	08/01/02	2	NA	< 10 UJ	< 10	NA	NA	NA	NA	NA
600ASB03[5.0]	08/01/02	5	NA	< 200 UJ	**1,100**	NA	NA	NA	NA	NA
600ASB04[2]	08/01/02	2	NA	12	36	NA	NA	NA	NA	NA
600ASB04[5]	08/01/02	5	NA	< 10 UJ	19 J-	NA	NA	NA	NA	NA
600ASB05[2]	08/01/02	2	NA	< 10	24	NA	NA	NA	NA	NA
600ASB05[5]	08/01/02	5	NA	< 10	< 10	NA	NA	NA	NA	NA
600ASB06[2]	08/01/02	2	NA	< 10	< 10	NA	NA	NA	NA	NA
600ASB06[5]	08/01/02	5	NA	< 10 UJ	< 10 UJ	NA	NA	NA	NA	NA
600ASB07[2.0]	01/17/03	2	NA	< 110	**7,900**	NA	NA	NA	NA	NA
600ASB07[5.5]	01/17/03	5.5	NA	< 5.7	17	NA	NA	NA	NA	NA
600ASB07[10.0]	01/17/03	10	NA	< 5.9	18	NA	NA	NA	NA	NA
600ASB08[2.0]	01/17/03	2	NA	< 5.4	66	NA	NA	NA	NA	NA
600ASB08[5.5]	01/17/03	5.5	NA	< 14	**380**	NA	NA	NA	NA	NA
DUP011703C	01/17/03	6	NA	< 5.8	35	NA	NA	NA	NA	NA
600ASB08[7.0]	01/17/03	7	NA	< 6.3	17	NA	NA	NA	NA	NA
600ASB09[2.0]	01/16/03	2	NA	< 5.5	**180**	NA	NA	NA	NA	NA
600ASB09[7.0]	01/16/03	7	NA	< 6	27	NA	NA	NA	NA	NA
DUP011603C	01/16/03	7.5	NA	< 5.8	< 12	NA	NA	NA	NA	NA

Table C-1
Summary of TPH, BTEX, and MTBE Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	Sample Date	Sample Depth (feet)	TPH As Gasoline (C_7-C_{12})	TPH As Diesel (C_{12}-C_{24})	TPH As Fuel Oil (C_{24}-C_{36})	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
		Analytical Method	GC/MS Comb SW8015M	GC/MS Comb SW8015M	GC/MS Comb SW8015M	SW8260B	SW8260B	SW8260B	SW8260B	SW8260B
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Cleanup Level[1]			**11.6**	**144**	**144**	**0.6**	**260**	**5**	**22**	**190**
600ASB09[10.0][MSD]	01/16/03	10	NA	< 7.4	24	NA	NA	NA	NA	NA
600CSB01[2]	07/31/02	2	< 1 UJ	< 10	NA	< 0.005	< 0.01	< 0.005	< 0.01	< 0.005
600CSB01[5]	07/31/02	5	< 1 UJ	< 10 UJ	NA	< 0.005	< 0.01	< 0.005	< 0.01	< 0.005
600CSB02[2]	07/31/02	2	< 1 UJ	< 10	NA	< 0.005	< 0.01	< 0.005	< 0.01	< 0.005
600CSB02[4.0]	07/31/02	4	< 1 UJ	< 10	NA	< 0.005	< 0.01	< 0.005	< 0.01	< 0.005
600CSB03[2.0]	07/29/02	2	< 1 UJ	< 10	NA	< 0.005	< 0.01	< 0.005	< 0.01	< 0.005
600CSB03[5.0]	07/29/02	5	< 1 UJ	< 10	NA	< 0.005	< 0.01	< 0.005	< 0.01	< 0.005
600CSB04[2.0]	07/29/02	2	< 1 UJ	< 10	NA	< 0.005	< 0.01	< 0.005	< 0.01	< 0.005
600CSB04[5.0]	07/29/02	5	< 1 UJ	**510**	NA	< 0.005	< 0.01	< 0.005	< 0.01	< 0.005
600CSB05[2.0]	01/13/03	2	NA	< 1.1	NA	NA	NA	NA	NA	NA
600CSB05[8.0]	01/13/03	8	NA	< 1.2	NA	NA	NA	NA	NA	NA
600CSB05[10.0]	01/13/03	10	NA	< 1.2	NA	NA	NA	NA	NA	NA
600CSB06[2.0]	01/13/03	2	NA	< 43	NA	NA	NA	NA	NA	NA
600CSB06[5.0]	01/13/03	5	NA	1.9	NA	NA	NA	NA	NA	NA
600CSB06[10.0]	01/13/03	10	NA	< 1.7	NA	NA	NA	NA	NA	NA
600CSB07[2.0]	01/13/03	2	NA	< 53	NA	NA	NA	NA	NA	NA
600CSB07[5.5]	01/13/03	5.5	NA	< 1.2	NA	NA	NA	NA	NA	NA
600CSB07[10.0]	01/13/03	10	NA	< 1.3	NA	NA	NA	NA	NA	NA
600FDSSB01[2.0]	08/01/02	2	< 1 UJ	< 100	**320**	< 0.005	< 0.01	< 0.005	< 0.01	< 0.005
600FDSSB01[3.5]	08/01/02	3.5	< 1 UJ	**460**	**1,800**	< 0.005	< 0.01	< 0.005	< 0.01	< 0.005
600FDSSB02[2.0]	01/15/03	2	< 1	< 52	**1,100**	NA	NA	NA	NA	NA
600FDSSB02[5.5]	01/15/03	5.5	< 1.2 UJ	< 6	63	NA	NA	NA	NA	NA
600FDSSB02[10.0]	01/15/03	10	< 1.2	< 6.1	14	NA	NA	NA	NA	NA

Table C-1
Summary of TPH, BTEX, and MTBE Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	**Sample Date**	**Sample Depth (feet)**	**TPH As Gasoline (C_7-C_{12})**	**TPH As Diesel (C_{12}-C_{24})**	**TPH As Fuel Oil (C_{24}-C_{36})**	**Benzene**	**Toluene**	**Ethylbenzene**	**Total Xylenes**	**MTBE**
		Analytical Method	GC/MS Comb SW8015M	GC/MS Comb SW8015M	GC/MS Comb SW8015M	SW8260B	SW8260B	SW8260B	SW8260B	SW8260B
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Cleanup Level[1]			**11.6**	**144**	**144**	**0.6**	**260**	**5**	**22**	**190**
600RRSB01[2.0]	08/05/02	2	< 1 UJ	24 J-	**290**	< 0.005	< 0.01	< 0.005	< 0.01 UJ	NA
DUP080502B	08/05/02	2.5	< 1 UJ	58 J-	**1,100 J-**	< 0.005	< 0.01	< 0.005 UJ	< 0.01 UJ	NA
600RRSB01[5.5]	08/05/02	5.5	< 1 UJ	< 10 UJ	< 10 UJ	< 0.005	< 0.01	< 0.005	< 0.01 UJ	NA
600RRSB02[2.0]	08/05/02	2	< 1 UJ	14	89	< 0.005	< 0.01	< 0.005	< 0.01 UJ	NA
600RRSB02[5.0]	08/05/02	5	< 1 UJ	22 J-	53 J-	< 0.005	< 0.01	< 0.005 UJ	< 0.01 UJ	NA
600RRSB03[2.0]	08/05/02	2	1.5 J-	**650 J-**	**3,200**	< 0.005	< 0.01	< 0.005 UJ	< 0.01 UJ	NA
600RRSB03[5.0]	08/05/02	5	1 J-	23 J-	130	< 0.005 UJ	< 0.01 UJ	< 0.005 UJ	< 0.01 UJ	NA
600RRSB04[2]MSD	08/07/02	2	< 1 UJ	< 40 UJ	**330 J-**	< 0.005	< 0.01	< 0.005	< 0.01	NA
600RRSB04[4]MSD	08/07/02	4	< 1 UJ	< 20 UJ	**180 J+**	< 0.005	< 0.01	< 0.005	< 0.01	NA
600RRSB05[2.0]	01/16/03	2	NA	< 6.2	21	NA	NA	NA	NA	NA
600RRSB05[6.0]	01/16/03	6	NA	< 6	< 12	NA	NA	NA	NA	NA
600RRSB05[10.0]	01/16/03	10	NA	< 5.8	130	NA	NA	NA	NA	NA
600RRSB06[2.0]	01/21/03	2	< 1.1	< 27	**1,100**	NA	NA	NA	NA	NA
600RRSB06[5.5]	01/21/03	5.5	< 1.2	26	99	NA	NA	NA	NA	NA
DUP012103D	01/21/03	6	< 1.2	< 6	14	NA	NA	NA	NA	NA
600RRSB06[10.0]	01/21/03	10	< 1.2	< 5.8	< 12	NA	NA	NA	NA	NA
600RRSB07[2.0]	01/22/03	2	< 1.1	< 53	**2,200**	NA	NA	NA	NA	NA
600RRSB07[7.0]	01/22/03	7	< 1.2	< 5.9	16	NA	NA	NA	NA	NA
600RRSB07[9.5]	01/22/03	9.5	< 1.4	< 14	**300**	NA	NA	NA	NA	NA
600RRSB08[2.0]	01/21/03	2	NA	< 27	**540**	NA	NA	NA	NA	NA
600RRSB08[5.5]	01/21/03	5.5	NA	< 5.7	< 11	NA	NA	NA	NA	NA
DUP012103B	01/21/03	6	NA	< 5.8	< 12	NA	NA	NA	NA	NA
600RRSB08[10.0]	01/21/03	10	NA	< 9.5	32	NA	NA	NA	NA	NA

Table C-1
Summary of TPH, BTEX, and MTBE Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	Sample Date	Sample Depth (feet)	TPH As Gasoline (C_7-C_{12})	TPH As Diesel (C_{12}-C_{24})	TPH As Fuel Oil (C_{24}-C_{36})	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
		Analytical Method	GC/MS Comb SW8015M	GC/MS Comb SW8015M	GC/MS Comb SW8015M	SW8260B	SW8260B	SW8260B	SW8260B	SW8260B
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Cleanup Level[1]			**11.6**	**144**	**144**	**0.6**	**260**	**5**	**22**	**190**
600RRSB09[2.0]	01/22/03	2	NA	< 110	**2,200**	NA	NA	NA	NA	NA
600RRSB09[7.5][MSD]	01/22/03	7.5	NA	< 5.8	< 12	NA	NA	NA	NA	NA
600RRSB09[9.5]	01/22/03	9.5	NA	< 9.5	46	NA	NA	NA	NA	NA
600SDSB01[2.0]	08/06/02	2	< 1 UJ	< 400	**1,400**	< 0.005	< 0.01	< 0.005	< 0.01	< 0.02
600SDSB01[5.0]	08/06/02	5	< 1 UJ	< 10 UJ	< 10 UJ	< 0.005 UJ	< 0.01 UJ	< 0.005 UJ	< 0.01 UJ	< 0.02 UJ
600SDSB02[2.0]	08/01/02	2	< 1 UJ	**190**	**1,100**	< 0.005	< 0.01	< 0.005	< 0.01 UJ	< 0.02
600SDSB02[5.0]	08/01/02	5	< 1 UJ	18	**150**	< 0.005	< 0.01	< 0.005	< 0.01 UJ	< 0.02
600SDSB03[2.0]	08/06/02	2	< 1 UJ	< 10 UJ	< 10 UJ	< 0.005	< 0.01	< 0.005	< 0.01	< 0.02
600SDSB03[5.5]	08/06/02	5.5	< 1 UJ	< 10 UJ	86 J-	< 0.005	< 0.01	< 0.005	< 0.01	< 0.02
600SDSB04[2.0]	08/06/02	2	< 1 UJ	< 10 UJ	< 10 UJ	< 0.005	< 0.01	< 0.005	< 0.01	< 0.02
DUP080602B	08/06/02	2.5	< 1 UJ	< 10 UJ	< 10 UJ	< 0.005	< 0.01	< 0.005	< 0.01	< 0.02
600SDSB04[5.0]	08/06/02	5	< 1 UJ	< 10 UJ	< 10 UJ	< 0.005	< 0.01	< 0.005	< 0.01	< 0.02
600SDSB05[2]	08/07/02	2	< 1 UJ	< 10	< 10	< 0.005	< 0.01	< 0.005	< 0.01	< 0.02
600SDSB05[5]	08/07/02	5	< 1 UJ	< 10	< 10	< 0.005	< 0.01	< 0.005	< 0.01	< 0.02
LTTDSB01[2.5]	07/29/02	2.5	< 1 UJ	< 10	< 10	< 0.005	< 0.01	< 0.005	< 0.01	NA
LTTDSB01[5.0]	07/29/02	5	< 1 UJ	< 10	< 10	< 0.005	< 0.01	< 0.005	< 0.01	NA
LTTDSB02[2.0]	07/29/02	2	< 1 UJ	< 10	< 10	< 0.005	< 0.01	< 0.005 UJ	< 0.01 UJ	NA
LTTDSB02[5.0]	07/29/02	5	< 1 UJ	< 10	< 10	< 0.005	< 0.01	< 0.005	< 0.01	NA
LTTDSB03[2.0]	07/29/02	2	< 1 UJ	< 10 UJ	< 10 UJ	< 0.005	< 0.01	< 0.005	< 0.01	NA
LTTDSB03[5.0]	07/29/02	5	< 1 UJ	< 10 UJ	< 10 UJ	< 0.005	< 0.01	< 0.005	< 0.01	NA
LTTDSB04[2.0]	07/29/02	2	< 1 UJ	< 10	< 10	< 0.005	< 0.01	< 0.005	< 0.01	NA
LTTDSB04[5.0]	07/29/02	5	< 1 UJ	< 10	< 10	< 0.005	< 0.01	< 0.005	< 0.01	NA
LTTDSB05[2.0]	07/29/02	2	< 1 UJ	< 40	**280**	< 0.005	< 0.01	< 0.005	< 0.01	NA

Table C-1
Summary of TPH, BTEX, and MTBE Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	**Sample Date**	**Sample Depth (feet)**	**TPH As Gasoline (C_7-C_{12})**	**TPH As Diesel (C_{12}-C_{24})**	**TPH As Fuel Oil (C_{24}-C_{36})**	**Benzene**	**Toluene**	**Ethylbenzene**	**Total Xylenes**	**MTBE**
		Analytical Method	GC/MS Comb SW8015M	GC/MS Comb SW8015M	GC/MS Comb SW8015M	SW8260B	SW8260B	SW8260B	SW8260B	SW8260B
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Cleanup Level[1]			**11.6**	**144**	**144**	**0.6**	**260**	**5**	**22**	**190**
LTTDSB05[5.0]	07/29/02	5	< 1 UJ	< 10 UJ	< 10 UJ	< 0.005	< 0.01	< 0.005	< 0.01	NA
LTTDSB06[2.0]	07/29/02	2	< 1 UJ	< 10 UJ	< 10 UJ	< 0.005	< 0.01	< 0.005	< 0.01	NA
LTTDSB06[4.5]	07/29/02	4.5	< 1 UJ	14	< 10	< 0.005	< 0.01	< 0.005	< 0.01	NA
600SB101[2]	08/06/02	2	< 1 UJ	47	**930**	< 0.005	< 0.01	< 0.005 UJ	< 0.01 UJ	< 0.02
DUP080602A	08/06/02	2.5	< 1 UJ	< 10 UJ	26 J-	< 0.005	< 0.01	< 0.005	< 0.01	< 0.02
600SB101[4]	08/06/02	4	**2,600 J-**	140 J-	12 J-	< 0.5 UJ	< 1 UJ	< 0.5 UJ	< 1 UJ	< 2 UJ
600SB102[2]	08/06/02	2	< 1 UJ	< 10 UJ	65 J-	< 0.005	< 0.01	< 0.005	< 0.01	< 0.02
600SB102[4]	08/06/02	4	< 1 UJ	< 10 UJ	< 10 UJ	< 0.005	< 0.01	< 0.005	< 0.01	< 0.02
600SB103[2]	08/05/02	2	< 1 UJ	< 10 UJ	22	< 0.005	< 0.01	< 0.005	< 0.01	< 0.02
600SB103[4]	08/05/02	4	< 1 UJ	< 10 UJ	< 10 UJ	< 0.005	< 0.01	< 0.005	< 0.01	< 0.02
DUP080502D	08/05/02	4.5	< 1 UJ	< 10 UJ	< 10	< 0.005	< 0.01	< 0.005	< 0.01	< 0.02
600SB104[2]	08/06/02	2	< 1 UJ	< 10	38	< 0.005	< 0.01	< 0.005	< 0.01	< 0.02
600SB104[4]	08/06/02	4	< 1 UJ	< 10 UJ	< 10 UJ	< 0.005	< 0.01	< 0.005	< 0.01	< 0.02
600SB105[2]	08/05/02	2	< 1 UJ	< 10 UJ	11 J-	< 0.005	< 0.01	< 0.005	< 0.01	< 0.02
600SB105[4]	08/05/02	4	< 1 UJ	< 10 UJ	< 10	< 0.005	< 0.01	< 0.005	< 0.01	< 0.02
DUP080502A	08/05/02	4.5	< 1 UJ	< 10 UJ	< 10	< 0.005	< 0.01	< 0.005	< 0.01	< 0.02
600SB106[2]	08/05/02	2	< 1 UJ	< 10 UJ	44 J-	< 0.005	< 0.01	< 0.005	< 0.01	< 0.02
600SB106[4]	08/05/02	4	< 1 UJ	< 10 UJ	< 10	< 0.005	< 0.01	< 0.005	< 0.01	< 0.02
600SB107[2]	08/02/02	2	< 1 UJ	< 10 UJ	39	< 0.005	< 0.01	< 0.005 UJ	< 0.01 UJ	< 0.02
600SB107[4]	08/02/02	4	< 1 UJ	< 10 UJ	48	< 0.005	< 0.01	< 0.005 UJ	< 0.01 UJ	< 0.02
600SB108[2]	08/02/02	2	< 1 UJ	< 10 UJ	47	< 0.005	< 0.01	< 0.005	< 0.01	< 0.02

Table C-1
Summary of TPH, BTEX, and MTBE Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	**Sample Date**	**Sample Depth (feet)**	**TPH As Gasoline (C_7-C_{12})**	**TPH As Diesel (C_{12}-C_{24})**	**TPH As Fuel Oil (C_{24}-C_{36})**	**Benzene**	**Toluene**	**Ethylbenzene**	**Total Xylenes**	**MTBE**
		Analytical Method	GC/MS Comb SW8015M	GC/MS Comb SW8015M	GC/MS Comb SW8015M	SW8260B	SW8260B	SW8260B	SW8260B	SW8260B
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Cleanup Level[1]			**11.6**	**144**	**144**	**0.6**	**260**	**5**	**22**	**190**
600SB108[4]	08/02/02	4	< 1 UJ	< 10 UJ	11	< 0.005	< 0.01	< 0.005	< 0.01	< 0.02
600SB109[2]	08/05/02	2	< 1 UJ	< 10 UJ	< 10	< 0.005	< 0.01	< 0.005	< 0.01	< 0.02
600SB109[4]	08/05/02	4	< 1 UJ	< 10 UJ	17	< 0.005	< 0.01	< 0.005	< 0.01	< 0.02

Notes

[1] Cleanup Levels are found in Table 3.
BOLD values indicate concentration exceeding screening levels.
DUP prefix indicates blind duplicate sample; parent sample precedes duplicate sample.
feet - feet below ground surface
mg/kg - milligrams per kilogram
MSD - Matrix spike duplicate
MSD indicates to the laboratory which samples were to be used for the MSD quality control sample analyses. These are not matrix spike results.
MTBE - Methyl tert-butyl ether
NA - not analyzed
TPH - Total petroleum hydrocarbons
TPH as Fuel Oil using a motor oil standard with carbon range C_{24}-C_{36}
J+ - Data validation qualifier, "The analyte was positively identified; the associated numerical value is biased high due to a high surrogate recovery and should be considered an approximate concentration of the analyte in the sample."
J- - Data validation qualifier, "The analyte was positively identified; the associated numerical values is biased low due to a low surrogate recovery and should be considered an approximate concentration of the analyte in the sample."
UJ - Data validation qualifier, "The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample."

Table C-2
Summary of VOC Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	Sample Date	Sample Depth (feet)	1,2-DCE	2-Butanone	Acetone	Carbon Disulfide	Chloroform	Trans-1,3-DCP	All Other VOCs
		Analytical Method	SW8260B	SW8260B	SW8260B	SW8260B	SW8260B	SW8260B	SW8260B
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Screening Level[1]			**NE**	**3.8**	**0.24**	**200**	**NE**	**NE**	**--**
601SB01[2]	08/06/02	2	NA	NA	NA	NA	NA	NA	ND
601SB01[4]	08/06/02	4	NA	NA	NA	NA	NA	NA	ND
601SB02[2.5]	08/05/02	2.5	NA	NA	NA	NA	NA	NA	ND
601SB02[4.5]	08/05/02	4.5	NA	NA	NA	NA	NA	NA	ND
603SB01[2.0]	08/05/02	2	NA	NA	NA	NA	NA	NA	ND
603SB01[5.0]	08/05/02	5	NA	NA	NA	NA	NA	NA	ND
605SB01[10.0]	01/22/03	10	< 0.00058	< 0.012	< 0.058	< 0.012	< 0.0058	< 0.0058	ND
605SB02[8.0]	01/16/03	8	< 0.011	< 0.021	< 0.11	0.024	< 0.011	< 0.011	ND
609SB01[8.0]	01/14/03	8	< 0.0087	< 0.017	< 0.087	< 0.017	< 0.0087	< 0.0087	ND
610SB01[2.0]	08/05/02	2	< 0.005 UJ	< 0.05 UJ	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
DUP080502E[MSD]	08/05/02	2.5	< 0.005 UJ	< 0.05 UJ	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
610SB01[5.0]	08/05/02	5	< 0.005 UJ	< 0.05 UJ	< 0.05 UJ	0.005 J+	< 0.005	< 0.01	ND
610SB02[7.5]	01/16/03	7.5	< 0.006	0.017	< 0.06	< 0.012	< 0.006	< 0.006	ND
610SB03[8.5]	01/14/03	8.5	< 0.007	< 0.014	< 0.07	< 0.014	< 0.007	< 0.007	ND
610SB04[7.5]	01/14/03	7.5	0.13	< 0.025	< 0.12	< 0.025	< 0.012	< 0.012	ND
613SB01[2.0]	08/02/02	2	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
613SB01[5.0]	08/02/02	5	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
613SB02[2.0]	08/02/02	2	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
613SB02[5.0]	08/02/02	5	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
613SB03[2.0]	08/02/02	2	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
DUP080202C	08/02/02	2	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
613SB03[5.0]	08/02/02	5	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
613SB04[2.0]	08/02/02	2	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND

Table C-2
Summary of VOC Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	Sample Date	Sample Depth (feet)	1,2-DCE	2-Butanone	Acetone	Carbon Disulfide	Chloroform	Trans-1,3-DCP	All Other VOCs
		Analytical Method	SW8260B	SW8260B	SW8260B	SW8260B	SW8260B	SW8260B	SW8260B
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Screening Level[1]			**NE**	**3.8**	**0.24**	**200**	**NE**	**NE**	**--**
613SB04[4.5]	08/02/02	4.5	< 0.005 UJ	< 0.05 UJ	< 0.05 UJ	< 0.005 UJ	< 0.005 UJ	< 0.01 UJ	ND
613SB05[2.0]	08/02/02	2	< 0.005 UJ	< 0.05 UJ	< 0.05 UJ	< 0.005 UJ	< 0.005 UJ	< 0.01	ND
613SB05[4.0]	08/02/02	4	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
613SB06[2.0]	08/02/02	2	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
613SB06[5.0]	08/02/02	5	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
613SB07[2]	07/30/02	2	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
613SB07[5]	07/30/02	5	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
613SB08[7.0]	01/21/03	7	< 0.0028	< 0.057	< 0.28	< 0.057 UJ	< 0.028	< 0.028	ND
DUP012103A[MSD]	01/21/03	6.5	< 0.57	< 11	< 57 UJ	< 11	< 5.7	< 5.7	ND
613SB08[10.0]	01/21/03	10	< 0.0006	< 0.012	< 0.06	< 0.012	< 0.006	< 0.006	ND
616SB01[2.0]	07/30/02	2	NA	NA	NA	NA	NA	NA	ND
DUP073002D(MSD)	07/30/02	1.5	NA	NA	NA	NA	NA	NA	ND
616SB01[4.0]	07/30/02	4	NA	NA	NA	NA	NA	NA	ND
616SB02[2.0]	07/30/02	2	NA	NA	NA	NA	NA	NA	ND
616SB02[5.0]	07/30/02	5	NA	NA	NA	NA	NA	NA	ND
616SB03[2.0]	07/30/02	2	NA	NA	NA	NA	NA	NA	ND
616SB03[5.0]	07/30/02	5	NA	NA	NA	NA	NA	NA	ND
617SB01[2.0]	08/01/02	2	NA	NA	NA	NA	NA	NA	ND
617SB01[5.0]	08/01/02	5	NA	NA	NA	NA	NA	NA	ND
617SB02[2.0]	07/31/02	2	NA	NA	NA	NA	NA	NA	ND
617SB02[5.0]	07/31/02	5	NA	NA	NA	NA	NA	NA	ND
617SB03[2.0]	08/01/02	2	NA	NA	NA	NA	NA	NA	ND
617SB03[5.0]	08/01/02	5	NA	NA	NA	NA	NA	NA	ND

Table C-2
Summary of VOC Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	Sample Date	Sample Depth (feet)	1,2-DCE	2-Butanone	Acetone	Carbon Disulfide	Chloroform	Trans-1,3-DCP	All Other VOCs
		Analytical Method	SW8260B	SW8260B	SW8260B	SW8260B	SW8260B	SW8260B	SW8260B
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Screening Level[1]			**NE**	**3.8**	**0.24**	**200**	**NE**	**NE**	**--**
619SB01[4.5]	07/31/02	4.5	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
619SB01[6.0]	07/31/02	6	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
619SB02[2]	08/06/02	2	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
DUP080602D[MSD]	08/06/02	2.5	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
619SB02[5]	08/06/02	5	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
619SB03[4.5]	07/31/02	4.5	< 0.005 UJ	< 0.05	0.28 J- *	< 0.005	< 0.005	< 0.01	ND
619SB03[6.0]	07/31/02	6	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
619SB04[13.0][MSD]	01/23/03	13	< 0.00064	< 0.013	< 0.064	< 0.013	< 0.0064	< 0.0064	ND
625SB01[2]	07/29/02	2	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
625SB01[4]	07/29/02	4	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
625SB02[2]	07/29/02	2	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
625SB03[2]	07/29/02	2	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
DUP072902A	07/29/02	2	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
625SB03[5]	07/29/02	5	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
DUP072902B	07/29/02	5.5	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
625SB04[2]	07/29/02	2	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
625SB04[5]	07/29/02	5	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
626SB01[2]	07/29/02	2	NA	NA	NA	NA	NA	NA	ND
626SB01[4]	07/29/02	4	NA	NA	NA	NA	NA	NA	ND
626SB02[2]	07/29/02	2	NA	NA	NA	NA	NA	NA	ND
626SB02[4]	07/29/02	4	NA	NA	NA	NA	NA	NA	ND
626SB03[2]	07/29/02	2	NA	NA	NA	NA	NA	NA	ND
626SB03[5]	07/29/02	5	NA	NA	NA	NA	NA	NA	ND

Table C-2
Summary of VOC Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	Sample Date	Sample Depth (feet)	1,2-DCE	2-Butanone	Acetone	Carbon Disulfide	Chloroform	Trans-1,3-DCP	All Other VOCs
		Analytical Method	SW8260B	SW8260B	SW8260B	SW8260B	SW8260B	SW8260B	SW8260B
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Screening Level[1]			**NE**	**3.8**	**0.24**	**200**	**NE**	**NE**	**--**
626SB04[11.0]	01/23/03	11	< 0.00084	0.021	< 0.084	< 0.017	< 0.0084	< 0.0084	ND
626SB05[8.5]	01/23/03	8.5	< 0.00095	< 0.019	< 0.095	< 0.019 UJ	< 0.0095	< 0.0095	ND
DUP012303E	01/23/03	9	< 0.003	< 0.061	< 0.3	< 0.061 UJ	< 0.03	< 0.03	ND
626SB05[10.0]	01/23/03	10	< 0.0012	< 0.025	< 0.12	< 0.025 UJ	< 0.012	< 0.012	ND
628SB01[2.0]	07/30/02	2	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
628SB01[5.0]	07/30/02	5	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
628SB02[2.5]	07/30/02	2.5	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
628SB02[5.5]	07/30/02	5.5	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
DUP073002A	07/30/02	5	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
628SB03[2.0]	07/30/02	2	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
628SB03[4.5]	07/30/02	4.5	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
628SB04[2]	07/30/02	2	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
628SB04[5]	07/30/02	5	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
628SB05[2]	07/31/02	2	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
628SB05[5]	07/31/02	5	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
628SB06[2]	07/31/02	2	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	0.015 J-	ND
628SB06[4]	07/31/02	4	< 0.005 UJ	< 0.05	0.14 J-	< 0.005	< 0.005	< 0.01	ND
628SB07[2]	07/31/02	2	< 0.2 UJ	< 2	< 2 UJ	< 0.2	< 0.2	< 0.4	ND
628SB07[5]	07/31/02	5	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
628SB08[2]	07/31/02	2	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
628SB08[5]	07/31/02	5	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
628SB09[2]	08/02/02	2	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
DUP080202A	08/02/02	2.5	< 0.005 UJ	< 0.05 UJ	< 0.05 UJ	< 0.005 UJ	< 0.005 UJ	< 0.01 UJ	ND

Table C-2
Summary of VOC Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	**Sample Date**	**Sample Depth (feet)**	**1,2-DCE**	**2-Butanone**	**Acetone**	**Carbon Disulfide**	**Chloroform**	**Trans-1,3-DCP**	**All Other VOCs**
		Analytical Method	SW8260B	SW8260B	SW8260B	SW8260B	SW8260B	SW8260B	SW8260B
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Screening Level[1]			**NE**	**3.8**	**0.24**	**200**	**NE**	**NE**	**--**
628SB09[5]	08/02/02	5	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
628SB10[2.0]	07/30/02	2	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
628SB10[5.0]	07/30/02	5	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
628SB11[2]	07/31/02	2	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
DUP073102A(MSD)	07/31/02	2.5	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
628SB11[5]	07/31/02	5	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
628SB15[9.5]	01/17/03	9.5	< 0.0058	< 0.012	< 0.058	< 0.012	< 0.0058	< 0.0058	ND
DUP011703A	01/17/03	10	< 0.0057	< 0.011	< 0.057	< 0.011	< 0.0057	< 0.0057	ND
628SB16[14.0]	01/23/03	4	< 0.00059	< 0.012	< 0.059	< 0.012 UJ	< 0.0059	< 0.0059	ND
T615SB01[2.0]	08/01/02	2	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
T615SB01[4.5]	08/01/02	4.5	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
T615SB02[2.0]	07/31/02	2	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
T615SB02[5.0]	07/31/02	5	< 0.005 UJ	< 0.05	0.055 J-	< 0.005	< 0.005	< 0.01	ND
T618SB02[2.0]	08/06/02	2	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
DUP080602C	08/06/02	2.5	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
T618SB02[5.0]	08/06/02	5	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
S15SB01[2.0]	08/06/02	2	NA	NA	NA	NA	NA	NA	ND
S15SB01[5.0]	08/06/02	5	NA	NA	NA	NA	NA	NA	ND
S15SB02[2.0]	08/01/02	2	NA	NA	NA	NA	NA	NA	ND
S15SB02[4.0]	08/01/02	4	NA	NA	NA	NA	NA	NA	ND
S15SB03[2.0]	08/06/02	2	NA	NA	NA	NA	NA	NA	ND
S15SB03[5.0]	08/06/02	5	NA	NA	NA	NA	NA	NA	ND
600FDSSB01[2.0]	08/01/02	2	NA	NA	NA	NA	NA	NA	ND

Table C-2
Summary of VOC Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	**Sample Date**	**Sample Depth (feet)**	**1,2-DCE**	**2-Butanone**	**Acetone**	**Carbon Disulfide**	**Chloroform**	**Trans-1,3-DCP**	**All Other VOCs**
		Analytical Method	SW8260B	SW8260B	SW8260B	SW8260B	SW8260B	SW8260B	SW8260B
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Screening Level[1]			**NE**	**3.8**	**0.24**	**200**	**NE**	**NE**	**--**
600FDSSB01[3.5]	08/01/02	3.5	NA	NA	NA	NA	NA	NA	ND
600CSB01[2]	07/31/02	2	NA	NA	NA	NA	NA	NA	ND
600CSB01[5]	07/31/02	5	NA	NA	NA	NA	NA	NA	ND
600CSB02[2]	07/31/02	2	NA	NA	NA	NA	NA	NA	ND
600CSB02[4.0]	07/31/02	4	NA	NA	NA	NA	NA	NA	ND
600CSB03[2.0]	07/29/02	2	NA	NA	NA	NA	NA	NA	ND
600CSB03[5.0]	07/29/02	5	NA	NA	NA	NA	NA	NA	ND
600CSB04[2.0]	07/29/02	2	NA	NA	NA	NA	NA	NA	ND
600CSB04[5.0]	07/29/02	5	NA	NA	NA	NA	NA	NA	ND
600RRSB01[2.0]	08/05/02	2	NA	NA	NA	NA	NA	NA	ND
DUP080502B	08/05/02	2.5	NA	NA	NA	NA	NA	NA	ND
600RRSB01[5.5]	08/05/02	5.5	NA	NA	NA	NA	NA	NA	ND
600RRSB02[2.0]	08/05/02	2	NA	NA	NA	NA	NA	NA	ND
600RRSB02[5.0]	08/05/02	5	NA	NA	NA	NA	NA	NA	ND
600RRSB03[2.0]	08/05/02	2	NA	NA	NA	NA	NA	NA	ND
600RRSB03[5.0]	08/05/02	5	NA	NA	NA	NA	NA	NA	ND
600RRSB04[2]MSD	08/07/02	2	NA	NA	NA	NA	NA	NA	ND
600RRSB04[4]MSD	08/07/02	4	NA	NA	NA	NA	NA	NA	ND
600SDSB01[2.0]	08/06/02	2	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
600SDSB01[5.0]	08/06/02	5	< 0.005 UJ	< 0.05 UJ	< 0.05 UJ	< 0.005 UJ	< 0.005 UJ	< 0.01 UJ	ND
600SDSB02[2.0]	08/01/02	2	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
600SDSB02[5.0]	08/01/02	5	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
600SDSB03[2.0]	08/06/02	2	< 0.005 UJ	< 0.05 UJ	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND

Table C-2
Summary of VOC Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	Sample Date	Sample Depth (feet)	1,2-DCE	2-Butanone	Acetone	Carbon Disulfide	Chloroform	Trans-1,3-DCP	All Other VOCs
		Analytical Method	SW8260B	SW8260B	SW8260B	SW8260B	SW8260B	SW8260B	SW8260B
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Screening Level[1]			**NE**	**3.8**	**0.24**	**200**	**NE**	**NE**	**--**
600SDSB03[5.5]	08/06/02	5.5	< 0.005 UJ	< 0.05 UJ	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
600SDSB04[2.0]	08/06/02	2	< 0.005 UJ	< 0.05 UJ	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
DUP080602B	08/06/02	2.5	< 0.005 UJ	< 0.05 UJ	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
600SDSB04[5.0]	08/06/02	5	< 0.005 UJ	< 0.05 UJ	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
600SDSB05[2]	08/07/02	2	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
600SDSB05[5]	08/07/02	5	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
LTTDSB01[2.5]	07/29/02	2.5	NA	NA	NA	NA	NA	NA	ND
LTTDSB01[5.0]	07/29/02	5	NA	NA	NA	NA	NA	NA	ND
LTTDSB02[2.0]	07/29/02	2	NA	NA	NA	NA	NA	NA	ND
LTTDSB02[5.0]	07/29/02	5	NA	NA	NA	NA	NA	NA	ND
LTTDSB03[2.0]	07/29/02	2	NA	NA	NA	NA	NA	NA	ND
LTTDSB03[5.0]	07/29/02	5	NA	NA	NA	NA	NA	NA	ND
LTTDSB04[2.0]	07/29/02	2	NA	NA	NA	NA	NA	NA	ND
LTTDSB04[5.0]	07/29/02	5	NA	NA	NA	NA	NA	NA	ND
LTTDSB05[2.0]	07/29/02	2	NA	NA	NA	NA	NA	NA	ND
LTTDSB05[5.0]	07/29/02	5	NA	NA	NA	NA	NA	NA	ND
LTTDSB06[2.0]	07/29/02	2	NA	NA	NA	NA	NA	NA	ND
LTTDSB06[4.5]	07/29/02	4.5	NA	NA	NA	NA	NA	NA	ND

Table C-2
Summary of VOC Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	Sample Date	Sample Depth (feet)	1,2-DCE	2-Butanone	Acetone	Carbon Disulfide	Chloroform	Trans-1,3-DCP	All Other VOCs
		Analytical Method	SW8260B	SW8260B	SW8260B	SW8260B	SW8260B	SW8260B	SW8260B
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Screening Level[1]			**NE**	**3.8**	**0.24**	**200**	**NE**	**NE**	**--**
600SB101[2]	08/06/02	2	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
DUP080602A	08/06/02	2.5	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.005	ND
600SB101[4]	08/06/02	4	< 0.5 UJ	< 5 UJ	< 5 UJ	< 0.5 UJ	< 0.5 UJ	< 1 UJ	ND
600SB102[2]	08/06/02	2	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
600SB102[4]	08/06/02	4	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
600SB103[2]	08/05/02	2	< 0.005 UJ	< 0.05 UJ	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
600SB103[4]	08/05/02	4	< 0.005 UJ	< 0.05 UJ	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
DUP080502D	08/05/02	4.5	< 0.005 UJ	< 0.05 UJ	< 0.05 UJ	0.007 J+	< 0.005	< 0.01	ND
600SB104[2]	08/06/02	2	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
600SB104[4]	08/06/02	4	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
600SB105[2]	08/05/02	2	< 0.005 UJ	< 0.05 UJ	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
600SB105[4]	08/05/02	4	< 0.005 UJ	< 0.05 UJ	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
DUP080502A	08/05/02	4.5	< 0.005 UJ	< 0.05 UJ	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
600SB106[2]	08/05/02	2	< 0.005 UJ	< 0.05 UJ	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
600SB106[4]	08/05/02	4	< 0.005 UJ	< 0.05 UJ	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
600SB107[2]	08/02/02	2	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
600SB107[4]	08/02/02	4	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
600SB108[2]	08/02/02	2	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND

Table C-2
Summary of VOC Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	Sample Date	Sample Depth (feet)	1,2-DCE	2-Butanone	Acetone	Carbon Disulfide	Chloroform	Trans-1,3-DCP	All Other VOCs
		Analytical Method	SW8260B	SW8260B	SW8260B	SW8260B	SW8260B	SW8260B	SW8260B
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Screening Level[1]			**NE**	**3.8**	**0.24**	**200**	**NE**	**NE**	**--**
600SB108[4]	08/02/02	4	< 0.005 UJ	< 0.05	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
600SB109[2]	08/05/02	2	< 0.005 UJ	< 0.05 UJ	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND
600SB109[4]	08/05/02	4	< 0.005 UJ	< 0.05 UJ	< 0.05 UJ	< 0.005	< 0.005	< 0.01	ND

Notes
[1] Screening Levels were obtained from Table 1a of the *Draft Site Investigation Report Commissary/Post Exchange Study Area Presidio of San Francisco, California* (Treadwell& Rollo, 2003c).
DCE - dichloroethylene
DCP - Dichloropropene
DUP prefix indicates blind duplicate sample; parent sample precedes duplicate sample.
mg/kg - milligrams per kilogram
MSD - Matrix spike duplicate
MSD indicates to the laboratory which samples were to be used for the MSD quality control sample analyses. These are not matrix spike results.
ND - not detected above laboratory reporting limits.
NE - not established
VOCs - Volatile organic compounds
J+ - Data validation qualifier, "The analyte was positively identified; the associated numerical value is biased high due to a high surrogate recovery and should be considered an approximate concentration of the analyte in the sample."
J - - Data validation qualifier, "The analyte was positively identified; the associated numerical values is biased low due to a low surrogate recovery and should be considered an approximate concentration of the analyte in the sample."
UJ - Data validation qualifier, "The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample."
* Exceedance due to laboratory contamination

Table C-3
Summary of PAH Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	**Sample Date**	**Sample Depth (feet)**	**Anthracene**	**Benzo(a) Anthracene**	**Benzo(a) Pyrene**	**Benzo(b) Fluoranthene**	**Benzo(g,h,i) Perylene**	**Benzo(k) Fluoranthene**	**Chrysene**	**Dibenz(a,h) Anthracene**	**Fluoranthene**	**Fluorene**	**Indeno (1,2,3-c,d) Pyrene**	**Naphthalene**	**Phenanthrene**	**Pyrene**
		Analytical Method	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Cleanup Level[1]			**40**	**0.27**	**0.027**	**0.27**	**40**	**0.27**	**2.7**	**0.19**	**40**	**40**	**0.27**	**40**	**40**	**40**
601SB02[2.5]	08/05/02	2.5	0.063	0.093	**0.082**	0.06	0.046	0.055	0.12	< 0.02	0.15	0.025	0.041	< 0.2	0.31	0.15
601SB02[4.5]	08/05/02	4.5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	0.007	< 0.005
601SB03[3.0]	01/16/03	3	< 0.0016	0.0049 J	0.0046 J	< 0.0029	< 0.0015 J U	< 0.0029	0.0056 J	< 0.0014	0.0054 J	< 0.0025	< 0.0014	< 0.0029	0.0042 J	0.0068 J
601SB03[8.0]	01/16/03	8	0.0058 J	0.015	0.018	0.014	< 0.0015 U	0.013	0.016	< 0.0014	0.025	0.0053 J	0.011 J+	0.008	0.019	0.027
601SB03[11.0]	01/16/03	11	< 0.0017	< 0.0014	< 0.0041	< 0.0031	< 0.0016	< 0.0031	< 0.0016	< 0.0014	< 0.0013	< 0.0027	< 0.0015	< 0.003	< 0.0022	< 0.0022
603SB01[2.0]	08/05/02	2	< 0.005	0.008	0.007	< 0.005	< 0.005	0.006	0.01	< 0.005	0.014	< 0.005	< 0.005	< 0.05	0.011	0.018
603SB01[5.0]	08/05/02	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
604SB01[4.5]	07/31/02	4.5	< 0.015	0.053	**0.11**	0.063	0.035	< 0.015	0.23	< 0.015	0.041	0.029	< 0.015	< 0.15	0.055	0.1
604SB01[6.0]	07/31/02	6	0.017	0.062	**0.05**	0.028	0.026	0.027	0.06	0.006	0.11	0.013	0.021	< 0.05	0.073	0.14
604SB02[2.0]	08/05/02	2	< 0.005	0.01	0.009	0.006	0.008	0.006	0.014	< 0.005	0.018	< 0.005	0.006	< 0.05	0.012	0.021
604SB02[6.0]	08/05/02	6	< 0.005	0.011	0.009	0.008	0.007	0.008	0.012	< 0.005	0.014	< 0.005	0.006	< 0.05	0.018	0.014
604SB03[2.0]	01/14/03	2	< 0.0015	0.016	0.0068 J	0.01	0.0063 J	< 0.0028	0.012	0.0056 J	0.0038 J	0.0039 J	0.0051 J	0.01	0.016	0.0091
604SB03[3.5]	01/14/03	3.5	< 0.002	0.0079 J	0.0094 J	0.0064 J	< 0.0019	< 0.0037	0.0088 J	0.0052 J	0.0069 J	< 0.0032	0.0067 J	0.019	0.028	0.0078 J
604SB03[5.5]	01/14/03	5.5	< 0.0025	0.0065 J	0.011 J	< 0.0047	< 0.0024	< 0.0047	0.0065 J	< 0.0022	< 0.002	< 0.0041	0.0087 J	0.0085 J	0.014	0.0068 J
604SB04[2.0]	01/14/03	2	0.0052 J	0.017	0.024	0.032	0.015	0.01	0.022	0.0069 J	0.034	0.0099	0.015	0.11	0.055	0.035
604SB04[5.5]	01/14/03	5.5	0.036 J	**0.84**	**0.7**	**0.69**	0.3	0.25	0.86	0.087	0.86	< 0.014	**0.27**	< 0.016	0.11	1.4
604SB04[7.0]	01/14/03	7	< 0.0017	0.0042 J	0.0086	0.0077 J	0.0045 J	< 0.0031	0.0047 J	0.0064 J	0.0046 J	< 0.0027	0.0082	< 0.003	< 0.0022	0.0048 J
604SB05[3.0]	01/16/03	3	0.018	0.032	**0.032**	0.027	0.022	0.023	0.033	0.005 J J+	0.048	0.01	0.02 J+	0.063	0.071	0.051
DUP011603A	01/16/03	3.5	0.016	0.027	**0.033**	0.024	0.023	0.02	0.03	0.0041 J J+	0.05	0.018	0.021 J+	0.037	0.084	0.049
604SB05[6.0]	01/16/03	6	0.022	0.07	**0.082**	0.053	0.052	0.051	0.074	0.012	0.13	0.008 J	0.044	0.017	0.072	0.17
604SB05[8.0]	01/16/03	8	0.031	0.055	**0.08**	0.062	0.12	0.082	0.064	0.017	0.12	0.051	0.04	0.011 J	0.073	0.13
604SB06[3.0]	01/16/03	3	4.6	**3.4**	**2.9**	**2.4**	3.6	**1.6**	**3.2**	**1.3**	23	4.7	**1.8**	0.044	29	19
604SB06[5.5]	01/16/03	5.5	0.011	0.016	0.017	0.0097	< 0.0015 U	0.01	0.017	< 0.0014	0.027	< 0.0026	0.0079 J+	0.0047 J	0.013	0.032
604SB06[7.5]	01/16/03	7.5	0.097	0.045	**0.048**	0.042	0.17	0.03	0.093	0.026	0.21	0.075	0.081	0.044	0.61	0.18
604SB07[2.0]	01/14/03	2	< 0.0016	< 0.0014	0.0053 J	< 0.003	< 0.0015	< 0.003	< 0.0015	< 0.0014	< 0.0013	< 0.0026	0.005 J	< 0.0029	< 0.0021	< 0.0021
604SB07[3.5]	01/14/03	3.5	< 0.0015	0.011	0.016	0.015	0.0084	0.0057 J	0.013	0.0052 J	0.015	< 0.0024	0.01	0.0056 J	0.011	0.017
604SB07[5.5]	01/14/03	5.5	0.0053 J	0.017	0.024	0.018	0.012	0.0069 J	0.016	0.0064 J	0.019 J+	< 0.003	0.013	< 0.0034	0.011	0.031
604SB09[2.0]	01/14/03	2	< 0.0018	0.0063 J	0.0083 J	0.0084 J	0.0054 J	< 0.0033	0.0062 J	0.007 J	< 0.0014	< 0.0028	0.0084 J	< 0.0032	< 0.0023	< 0.0023
604SB09[4.0]	01/14/03	4	< 0.0015	< 0.0013	0.0054 J	< 0.0027	< 0.0014	< 0.0027	< 0.0014	0.0054 J	< 0.0012	< 0.0024	0.0063 J	< 0.0026	< 0.0019	< 0.0019
604SB09[10.0]	01/14/03	10	< 0.0015	< 0.0013	< 0.0037	< 0.0028	< 0.0015	< 0.0028	< 0.0015	< 0.0013	< 0.0012	< 0.0025	< 0.0014	< 0.0027	< 0.002	< 0.002
605SB01[2.5]	01/22/03	2.5	< 0.0015	0.0061 J	0.01	0.01	0.0074	0.0045 J	0.0055 J	0.007 J	0.0098	< 0.0024	0.0088	< 0.0027	0.0091	0.021
605SB01[5.0]	01/22/03	5	< 0.0016	< 0.0014	< 0.004	< 0.003	< 0.0016	< 0.003	< 0.0016	< 0.0014	< 0.0013	< 0.0026	< 0.0015	< 0.0029	< 0.0021	< 0.0021
605SB01[10.0]	01/22/03	10	< 0.0016	< 0.0013	< 0.0038	< 0.0029	< 0.0015	< 0.0029	< 0.0015	< 0.0014	< 0.0012	< 0.0025	< 0.0014	< 0.0028	< 0.0021	< 0.0021
605SB02[2.0]	01/16/03	2	< 0.0015	0.008	0.012	0.01	< 0.0014 U	0.0081	0.0093	< 0.0013	0.0093	< 0.0024	0.0087 J+	0.0048 J	0.0069 J	0.011
605SB02[5.0]	01/16/03	5	< 0.0015	< 0.0013	< 0.0037	< 0.0028	< 0.0014	< 0.0028	< 0.0014	< 0.0013	< 0.0012	< 0.0024	< 0.0014	< 0.0027	< 0.002	< 0.002
DUP011603B[MSD]	01/16/03	5.5	< 0.0016	< 0.0013	< 0.0039	< 0.0029	< 0.0015 J U	< 0.0029	< 0.0015	< 0.0014	< 0.0012	< 0.0025	< 0.0014	< 0.0028	< 0.0021	< 0.0021
605SB02[8.0]	01/16/03	8	< 0.0029	0.017	0.018	0.019	0.023	0.016	0.016	0.0085 J	0.034	0.012 J	0.017	< 0.0051	0.021	0.032
609SB01[2.0]	01/14/03	2	< 0.0015	0.0089	0.013	0.012	0.0057 J	0.0054 J	0.0083	0.0051 J	0.0081	< 0.0024	0.0079	0.014	0.0081	0.0092

Table C-3
Summary of PAH Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	**Sample Date**	**Sample Depth (feet)**	**Anthracene**	**Benzo(a) Anthracene**	**Benzo(a) Pyrene**	**Benzo(b) Fluoranthene**	**Benzo(g,h,i) Perylene**	**Benzo(k) Fluoranthene**	**Chrysene**	**Dibenz(a,h) Anthracene**	**Fluoranthene**	**Fluorene**	**Indeno (1,2,3-c,d) Pyrene**	**Naphthalene**	**Phenanthrene**	**Pyrene**
		Analytical Method	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Cleanup Level[1]			**40**	**0.27**	**0.027**	**0.27**	**40**	**0.27**	**2.7**	**0.19**	**40**	**40**	**0.27**	**40**	**40**	**40**
609SB01[4.0]	01/14/03	4	< 0.0016	< 0.0013	0.0053 J	< 0.0029	< 0.0015	< 0.0029	< 0.0015	0.0045 J	< 0.0012	< 0.0025	0.0052 J	< 0.0028	< 0.002	< 0.002
609SB01[8.0]	01/14/03	8	< 0.0024	< 0.002	0.0073 J	< 0.0044	< 0.0023	< 0.0044	< 0.0023	0.0065 J	< 0.0018	< 0.0038	0.0078 J	< 0.0042	< 0.0031	< 0.0031
610SB01[2.0]	08/05/02	2	< 0.005	0.021	**0.036**	0.024	0.054	0.019	0.028	0.012	0.058	< 0.005	0.031	< 0.05	0.037	0.067
DUP080502E[MSD]	08/05/02	2.5	< 0.005	0.041	**0.042**	0.027	0.029	0.023	0.047	0.008	0.051	< 0.005	0.023	< 0.05	0.019	0.067
610SB01[5.0]	08/05/02	5	0.034 J-	0.097 J-	**0.1**	0.074	0.059	0.065	0.11 J-	0.018	0.15 J-	0.007	0.053	< 0.05	0.057 J-	0.16 J-
610SB02[2.0]	01/16/03	2	< 0.0016	0.013	0.013	0.012	0.011	0.011	0.015	< 0.0014	0.022	< 0.0025	0.0086	< 0.0028	0.015	0.026
610SB02[5.0]	01/16/03	5	< 0.0015	0.0056 J	0.004 J	< 0.0028	< 0.0014	< 0.0028	0.0059 J	< 0.0013	0.0077	< 0.0024	< 0.0014	< 0.0027	0.0094	0.01
610SB02[7.5]	01/16/03	7.5	< 0.0016	< 0.0014	< 0.004	< 0.003	< 0.0016	< 0.003	< 0.0016	< 0.0014	< 0.0013	< 0.0026	< 0.0015	< 0.0029	< 0.0021	< 0.0021
610SB03[2.0]	01/14/03	2	< 0.006	0.062	**0.064**	0.066	0.032	0.022 J	0.055	0.019 J	0.098	< 0.0096	0.033	< 0.011	0.075	0.15
610SB03[5.5]	01/14/03	5.5	< 0.0015	0.0081	0.011	0.0072 J	0.0052 J	< 0.0028	0.008	0.0044 J	0.011	< 0.0024	0.0074	< 0.0027	0.0071 J	0.013
610SB03[8.5]	01/14/03	8.5	< 0.0019	0.015	0.016	0.016	0.0067 J	0.0057 J	0.017	0.006 J	0.026	< 0.003	0.011	< 0.0034	0.016	0.025
610SB04[2.0]	01/14/03	2	0.0047 J	0.017	0.017	0.016	< 0.0015 U	0.013	0.021	0.004 J	0.028	< 0.0025	0.014	0.0057 J	0.019	0.032
610SB04[6.0]	01/14/03	6	0.0041 J	0.019	0.024	0.017	0.021	0.016	0.02	< 0.0013	0.035	< 0.0024	0.017	< 0.0026	0.011	0.041
610SB04[7.5]	01/14/03	7.5	< 0.0017	0.0067 J	0.0089	0.0082	< 0.0016 U	0.0045 J	0.0057 J	< 0.0014	0.012	< 0.0027	0.0052 J	< 0.003	< 0.0022	0.022
613SB01[2.0]	08/02/02	2	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	0.12	< 0.06	< 0.06	< 0.6	0.09	0.75
613SB01[5.0]	08/02/02	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.005	< 0.005	0.007	< 0.005	< 0.005	< 0.05	< 0.005	0.015
613SB02[2.0]	08/02/02	2	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
613SB02[5.0]	08/02/02	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	0.012
613SB03[2.0]	08/02/02	2	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
DUP080202C	08/02/02	2.5	< 0.005	0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.007	< 0.005	0.022	< 0.005	< 0.005	< 0.05	0.014	0.1
613SB03[5.0]	08/02/02	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	0.006
613SB04[2.0]	08/02/02	2	0.045	0.15	**0.12**	0.068	0.05	0.076	0.17	0.017	0.31	0.012	0.048	< 0.05	0.27	0.39
613SB04[4.5]	08/02/02	4.5	< 0.005	0.008	0.008	0.006	0.007	0.005	0.012	< 0.005	0.017	< 0.005	< 0.005	< 0.05	0.02	0.02
613SB05[2.0]	08/02/02	2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1	< 0.1	< 0.1
613SB05[4.0]	08/02/02	4	< 0.005	0.011	0.009	0.005	< 0.005	0.006	0.014	< 0.005	0.016	< 0.005	< 0.005	< 0.05	0.012	0.022
613SB06[2.0]	08/02/02	2	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	0.013
613SB06[5.0]	08/02/02	5	0.03	0.096	**0.086**	0.048	0.033	0.068	0.12	0.01	0.15	0.007	0.028	< 0.05	0.13	0.21
613SB07[2]	07/30/02	2	< 0.005	0.017	**0.034**	0.019	0.02	0.008	0.035	< 0.005	0.02	< 0.005	0.006	< 0.05	0.012	0.026
613SB07[5]	07/30/02	5	0.014	0.061	**0.057**	0.048	0.049	0.032	0.082	< 0.01	0.089	< 0.01	0.036	< 0.1	0.062	0.1
613SB08[2.0]	01/21/03	2	0.0044 J	0.029	**0.038**	0.053	0.03	0.016	0.025	0.013	0.026	< 0.0024	0.018	0.0063 J	0.025	0.079 J+
613SB08[7.0]	01/21/03	7	< 0.0015	< 0.0013	0.0078	0.0073 J	0.0048 J	< 0.0028	< 0.0015	< 0.0013	0.0067 J	< 0.0025	0.0074 J	< 0.0028	0.0076	0.018 J+
DUP012103A[MSD]	01/21/03	6.5	0.042	0.059	**0.074**	0.094	0.035	0.033	0.056	< 0.0013	0.0083	0.23	0.026	0.19	0.45	0.37 J+
613SB08[10.0]	01/21/03	10	< 0.0016	0.0046 J	0.0091	0.0085	0.0057 J	0.0047 J	0.004 J	< 0.0014	0.0056 J	< 0.0026	0.0084	< 0.0029	0.0052 J	0.01 J+
613SB09[2.0][MSD]	01/17/03	2	0.013	0.046	**0.078**	0.069	0.046	0.035	0.088	0.014	0.067	< 0.0024	0.024	0.012	0.052	0.13
613SB09[5.5]	01/17/03	5.5	< 0.0016	< 0.0013	< 0.0038	< 0.0029	< 0.0015	< 0.0029	< 0.0015	< 0.0014	< 0.0012	< 0.0025	< 0.0014	< 0.0028	< 0.0021	< 0.0021
613SB09[7.5]	01/17/03	7.5	0.0061 J	0.033	**0.029**	0.024	0.02	0.023	0.028	< 0.0018	0.06	< 0.0033	0.012	< 0.0037	0.018	0.055
613SB10[2.5]	01/22/03	2.5	< 0.0015	< 0.0013	< 0.0037	< 0.0028	< 0.0015	< 0.0028	< 0.0015	< 0.0013	< 0.0012	< 0.0025	< 0.0014	< 0.0028	< 0.002	< 0.002
613SB10[5.5]	01/22/03	5.5	< 0.0016	< 0.0014	0.0076 J	0.0075 J	0.0051 J	< 0.003	< 0.0016	< 0.0014	< 0.0013	< 0.0026	0.0082	< 0.0029	< 0.0021	0.0055 J

Table C-3
Summary of PAH Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	**Sample Date**	**Sample Depth (feet)**	**Anthracene**	**Benzo(a) Anthracene**	**Benzo(a) Pyrene**	**Benzo(b) Fluoranthene**	**Benzo(g,h,i) Perylene**	**Benzo(k) Fluoranthene**	**Chrysene**	**Dibenz(a,h) Anthracene**	**Fluoranthene**	**Fluorene**	**Indeno (1,2,3-c,d) Pyrene**	**Naphthalene**	**Phenanthrene**	**Pyrene**
		Analytical Method	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Cleanup Level[1]			**40**	**0.27**	**0.027**	**0.27**	**40**	**0.27**	**2.7**	**0.19**	**40**	**40**	**0.27**	**40**	**40**	**40**
DUP012203A	01/22/03	5.5	< 0.0016	0.0042 J	0.0086	0.0089	0.0056 J	0.0041 J	0.0044 J	< 0.0014	0.0044 J	< 0.0026	0.0081	< 0.0029	< 0.0021	0.0086
613SB10[7.5]	01/22/03	7.5	0.02	0.075	**0.065**	0.07	0.034	0.028	0.072	0.014	0.13	0.0043 J	0.032	< 0.0031	0.091	0.18
613SB11[2.0]	01/21/03	2	< 0.0015	0.018	**0.034**	0.056	0.029	0.012	0.023	< 0.0013	0.019	< 0.0024	0.016	0.0065 J	0.015	0.058 J+
613SB11[6.0]	01/21/03	6	< 0.0015	< 0.0013	0.0075	0.0066 J	0.0044 J	< 0.0028	< 0.0015	< 0.0013	0.0039 J	< 0.0025	0.0075	< 0.0027	0.0043 J	0.0068 J J+
613SB11[8.0]	01/21/03	8	< 0.0019	< 0.0016	0.0087 J	0.0096	0.005 J	< 0.0036	< 0.0018	< 0.0017	< 0.0015	< 0.0031	< 0.0018	< 0.0035	0.0087 J	0.0059 J J+
613SB12[2.0]	01/21/03	2	0.11	0.12	**0.1**	0.12	0.088	0.08	0.19	0.028	0.4	< 0.0047	0.054	0.011 J	0.64	0.34
613SB12[5.5]	01/21/03	5.5	0.0089	0.038	**0.044**	0.048	0.027	0.019	0.046	0.012	0.064	0.0048 J	0.024	0.0054 J	0.06	0.098 J+
DUP012103C[MSD]	01/21/03	6	0.0099	0.027	**0.03**	0.028	0.018	0.013	0.028	0.0096	0.042	< 0.0026	0.018	< 0.0029	0.034	0.072 J+
613SB12[7.5][MSD]	01/21/03	7.5	< 0.0022	0.02	**0.031**	0.026	0.018	0.021	0.023	< 0.0019	0.03	0.0084 J	0.015	< 0.0039	0.032	0.03
617SB01[2.0]	08/01/02	2	< 0.005	0.024	0.019	0.016	0.012	0.013	0.035	< 0.005	0.028	< 0.005	0.008	< 0.05	0.021	0.046
617SB01[5.0]	08/01/02	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
617SB02[2.0]	07/31/02	2	0.03	0.18	**0.23**	0.18	0.14	0.16	0.21	0.03	0.3	0.012	0.11	< 0.05	0.19	0.34
617SB02[5.0]	07/31/02	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
617SB03[2.0]	08/01/02	2	0.006	0.029	0.022	0.021	0.012	0.014	0.043	< 0.005	0.046	< 0.005	0.008	< 0.05	0.037	0.06
617SB03[5.0]	08/01/02	5	< 0.005	0.018	0.014	0.009	0.007	0.01	0.017	< 0.005	0.03	< 0.005	0.005	< 0.05	0.02	0.034
617SB04[1.5]	01/15/03	1.5	0.0074	0.025	**0.036**	0.043	0.042	0.021	0.04	0.012	0.043	< 0.0024	0.019	0.0052 J	0.026	0.051
617SB04[6.0]	01/15/03	6	< 0.0017	< 0.0014	0.0044 J	0.0072 J	0.013	< 0.0031	0.0079 J	< 0.0014	< 0.0013	0.0047 J	< 0.0015	< 0.003	< 0.0022	0.0057 J
617SB04[8.0]	01/15/03	8	< 0.0016	< 0.0013	< 0.0039	< 0.0029	< 0.0015	< 0.0029	< 0.0015	< 0.0014	< 0.0012	< 0.0025	< 0.0014	< 0.0028	< 0.0021	< 0.0021
617SB05[1.5]	01/15/03	1.5	0.084	0.14	**0.11**	0.13	0.087	0.079	0.28	0.023 J	0.37	< 0.014	0.039 J	< 0.016	0.7	0.35
617SB05[4.0]	01/15/03	4	< 0.0016	0.0087	0.008	0.0061 J	0.0055 J	0.0056 J	0.0099	< 0.0014	0.015	< 0.0025	0.0049 J	0.012	0.015	0.02
617SB05[7.5]	01/15/03	7.5	< 0.0028	< 0.0024	< 0.007	< 0.0053	< 0.0027	< 0.0053	< 0.0027	< 0.0025	< 0.0022	< 0.0046	< 0.0026	< 0.0051	< 0.0038	< 0.0038
617SB06[2.5]	01/15/03	2.5	0.041	0.061	**0.065**	0.079	0.065	0.036	0.12	0.016	0.13	0.0058 J	0.024	0.0098 J	0.14	0.17
617SB06[6.0]	01/15/03	6	0.017	0.011	0.0062 J	0.0071 J	< 0.0018 U	< 0.0034	0.011	< 0.0016	0.015	0.0066 J	< 0.0017	0.045	0.037	0.016
617SB06[10.0]	01/15/03	10	< 0.0016	< 0.0014	< 0.0039	< 0.0029	< 0.0015	< 0.0029	< 0.0015	< 0.0014	< 0.0012	< 0.0025	< 0.0014	< 0.0029	< 0.0021	< 0.0021
617SB07[1.5]	01/15/03	1.5	0.17	0.24	**0.23**	0.24	0.2	0.16	0.47	0.055 J	0.63	0.064 J	0.13	0.21	0.85	0.56
617SB07[5.5]	01/15/03	5.5	0.054	0.034	**0.027**	0.034	0.028	0.018	0.038	0.0076 J	0.066	0.026	0.018	0.089	0.13	0.061
617SB07[9.0]	01/15/03	9	< 0.0017	< 0.0014	< 0.0041	< 0.0031	< 0.0016	< 0.0031	< 0.0016	< 0.0014	< 0.0013	< 0.0027	< 0.0015	< 0.003	< 0.0022	< 0.0022
617SB08[2.0]	01/15/03	2	0.011	0.049	**0.074**	0.072	0.06	0.046	0.077	0.011	0.075	< 0.0024	0.038	0.01	0.041	0.079
617SB08[5.5]	01/15/03	5.5	0.0057 J	0.015	0.016	0.011	0.012	0.011	0.014	< 0.0013	0.035	< 0.0025	0.0086	< 0.0028	0.028	0.043
617SB08[10.0]	01/15/03	10	< 0.0016	0.0052 J	0.0046 J	< 0.0029	< 0.0015	< 0.0029	0.0054 J	< 0.0013	0.0082	< 0.0025	< 0.0014	< 0.0028	0.0064 J	0.01
617SB09[2.0]	01/16/03	2	0.0048 J	0.016	0.022	0.017	0.021	0.014	0.02	< 0.0013	0.028	< 0.0023	0.017 J+	0.0044 J	0.022	0.036
617SB09[5.5]	01/16/03	5.5	0.0048 J	0.011	0.01	0.01	< 0.0015 U	0.008	0.01	< 0.0014	0.016	< 0.0025	0.0054 J J+	0.0048 J	0.014	0.018
617SB09[10.0]	01/16/03	10	< 0.0016	< 0.0014	< 0.004	< 0.003	< 0.0016	< 0.003	< 0.0016	< 0.0014	< 0.0013	< 0.0026	< 0.0015	< 0.003	< 0.0022	< 0.0022
619SB01[4.5]	07/31/02	4.5	< 0.005	0.012	0.013	0.009	0.008	0.007	0.015	< 0.005	0.021	< 0.005	0.007	0.058	0.021	0.024
619SB01[6.0]	07/31/02	6	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	0.006
619SB02[2]	08/06/02	2	< 0.005	0.014	0.017	0.013	0.014	0.009	0.022	< 0.005	0.018	< 0.005	0.007	< 0.05 UJ	0.013	0.025
DUP080602D[MSD]	08/06/02	2.5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05 UJ	< 0.005	< 0.005
619SB02[5]	08/06/02	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05 UJ	< 0.005	< 0.005

Table C-3
Summary of PAH Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	**Sample Date**	**Sample Depth (feet)**	**Anthracene**	**Benzo(a) Anthracene**	**Benzo(a) Pyrene**	**Benzo(b) Fluoranthene**	**Benzo(g,h,i) Perylene**	**Benzo(k) Fluoranthene**	**Chrysene**	**Dibenz(a,h) Anthracene**	**Fluoranthene**	**Fluorene**	**Indeno (1,2,3-c,d) Pyrene**	**Naphthalene**	**Phenanthrene**	**Pyrene**
		Analytical Method	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Cleanup Level[1]			**40**	**0.27**	**0.027**	**0.27**	**40**	**0.27**	**2.7**	**0.19**	**40**	**40**	**0.27**	**40**	**40**	**40**
619SB03[4.5]	07/31/02	4.5	< 0.005	0.023	0.019	0.021	0.02	0.007	0.065	< 0.005	0.02	< 0.005 UJ	0.006	< 0.05 UJ	0.028	0.048
619SB03[6.0]	07/31/02	6	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
619SB04[7.0]	01/23/03	7	< 0.0016	< 0.0013	< 0.0039	< 0.0029	< 0.0015	< 0.0029	< 0.0015	< 0.0014	< 0.0012	< 0.0025	< 0.0014	< 0.0028	< 0.0021	0.004 J
619SB04[11.5]	01/23/03	11.5	< 0.0023	< 0.0019	< 0.0055	< 0.0042	0.044	< 0.0042	< 0.0022	< 0.002	< 0.0018	< 0.0036	< 0.0021	< 0.0041	< 0.003	< 0.003
DUP012303A	01/23/03	12	< 0.0017	< 0.0014	< 0.0041	< 0.0031	< 0.0016	< 0.0031	< 0.0016	< 0.0015	< 0.0013	< 0.0027	< 0.0015	< 0.003	< 0.0022	< 0.0022
619SB04[13.0][MSD]	01/23/03	13	< 0.0017	< 0.0015	< 0.0042	< 0.0032	0.043	< 0.0032	< 0.0016	< 0.0015	0.0053 J	< 0.0028	< 0.0016	< 0.0031	< 0.0023	0.0048 J
625SB01[2]	07/29/02	2	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
625SB01[4]	07/29/02	4	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
625SB02[2]	07/29/02	2	< 0.005	0.012	0.017	0.012	0.018	0.01	0.016	< 0.005	0.016	< 0.005	0.012	< 0.05	0.012	0.021
625SB03[2]	07/29/02	2	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
DUP072902A	07/29/02	2.5	< 0.005	0.008	0.007	< 0.005	0.006	0.005	0.009	< 0.005	0.014	< 0.005	< 0.005	< 0.05	0.01	0.018
625SB03[5]	07/29/02	5	0.025	0.082	**0.078**	0.052	0.054	0.049	0.097	0.007	0.21	< 0.02	0.045	< 0.2	0.16	0.26
DUP072902B	07/29/02	5.5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
625SB04[2]	07/29/02	2	< 0.005	0.006	0.008	0.006	0.007	0.005	0.008	< 0.005	0.009	< 0.005	0.005	< 0.05	0.006	0.01
625SB04[5]	07/29/02	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
625SB05[2.0]	01/13/03	2	< 0.0059	0.061	**0.059**	0.085	0.026 J	0.022 J	0.084	0.021 J	0.12	< 0.0096	0.031	< 0.011	0.025 J	0.16
625SB05[7.5]	01/13/03	7.5	< 0.0062	< 0.0053	0.026 J	0.016 J	< 0.0059	< 0.011	0.02 J	0.018 J	0.021 J	< 0.0099	0.02 J	< 0.011	0.016 J	0.026 J
625SB05[10.0]	01/13/03	10	< 0.0029	< 0.0025	0.011 J	< 0.0055	< 0.0028	< 0.0055	< 0.0028	0.0092 J	< 0.0023	< 0.0047	0.011 J	< 0.0053	< 0.0039	< 0.0039
626SB01[2]	07/29/02	2	0.012	0.036	**0.078**	0.041	0.041	0.014	0.11	0.008	0.076	0.026	0.013	< 0.1	0.17	0.12
626SB01[4]	07/29/02	4	< 0.005 UJ	0.01 J-	0.014	0.011	0.016	0.006	0.016 J-	< 0.005	0.005 J-	< 0.005	0.009	< 0.05	< 0.005 UJ	0.013 J-
626SB02[2]	07/29/02	2	0.014	0.067	**0.027**	0.021	0.012	0.019	0.07	0.006	0.12	0.008	0.011	0.064	0.024	0.18
626SB02[4]	07/29/02	4	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
626SB03[2]	07/29/02	2	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
626SB03[5]	07/29/02	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
626SB04[6.5]	01/23/03	6.5	0.068	0.2	**0.14**	0.15	0.069	0.13	0.2	0.029	0.41	0.0061 J	0.068	0.011	0.38	0.3
DUP012303C[MSD]	01/23/03	7	< 0.0017	< 0.0014	< 0.0041	< 0.0031	< 0.0016	< 0.0031	< 0.0016	< 0.0014	< 0.0013	< 0.0027	< 0.0015	< 0.003	< 0.0022	< 0.0022
626SB04[9.0]	01/23/03	9	< 0.0016	< 0.0014	< 0.0039	< 0.003	< 0.0015	< 0.003	< 0.0015	< 0.0014	< 0.0013	< 0.0026	< 0.0015	< 0.0029	< 0.0021	< 0.0021
626SB04[11.0]	01/23/03	11	0.006 J	0.018	0.026	0.016	0.015	0.014	0.018	< 0.002	0.027	< 0.0036	0.013	< 0.0041	0.013	0.032
626SB05[7.0]	01/23/03	7	0.064	0.15	**0.13**	0.086	0.039	0.083	0.17	0.013	0.23	0.044	0.032	2.1	0.21	0.25
626SB05[8.5]	01/23/03	8.5	0.011 J	0.032	**0.044**	0.026	0.024	0.025	0.034	< 0.0022	0.047	< 0.0041	0.021	0.011 J	0.025	0.063
DUP012303E	01/23/03	9	0.011 J	0.034	**0.04**	0.043	0.022	0.026	0.073	< 0.0028	0.074	0.026	0.016	0.016	0.11	0.084
626SB05[10.0]	01/23/03	10	0.013 J	0.036	**0.052**	0.035	0.027	0.031	0.046	< 0.0029	0.058	< 0.0054	0.024	0.011 J	0.04	0.074
628SB01[2.0]	07/30/02	2	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
628SB01[5.0]	07/30/02	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
628SB02[2.5]	07/30/02	2.5	< 0.1	< 0.1	**0.13**	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1	< 0.1	0.29
628SB02[5.5]	07/30/02	5.5	< 0.005	0.007	0.006	< 0.005	< 0.005	< 0.005	0.009	< 0.005	0.006	< 0.005	< 0.005	< 0.05	< 0.005	0.009
DUP073002A	07/30/02	5	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.2	< 0.02	0.042
628SB03[2.0]	07/30/02	2	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005

Table C-3
Summary of PAH Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	**Sample Date**	**Sample Depth (feet)**	**Anthracene**	**Benzo(a) Anthracene**	**Benzo(a) Pyrene**	**Benzo(b) Fluoranthene**	**Benzo(g,h,i) Perylene**	**Benzo(k) Fluoranthene**	**Chrysene**	**Dibenz(a,h) Anthracene**	**Fluoranthene**	**Fluorene**	**Indeno (1,2,3-c,d) Pyrene**	**Naphthalene**	**Phenanthrene**	**Pyrene**
		Analytical Method	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Cleanup Level[1]			**40**	**0.27**	**0.027**	**0.27**	**40**	**0.27**	**2.7**	**0.19**	**40**	**40**	**0.27**	**40**	**40**	**40**
628SB03[4.5]	07/30/02	4.5	< 0.005	0.013	0.011	0.007	0.008	0.007	0.012	< 0.005	0.031	< 0.005	0.005	< 0.05	0.035	0.039
628SB04[2]	07/30/02	2	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
628SB04[5]	07/30/02	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
628SB05[2]	07/31/02	2	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.007	< 0.005	< 0.005	< 0.05	0.005	0.007
628SB05[5]	07/31/02	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
628SB06[2]	07/31/02	2	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
628SB06[4]	07/31/02	4	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
628SB07[2]	07/31/02	2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1	< 0.1	< 0.1
628SB07[5]	07/31/02	5	0.019	0.082	**0.053**	0.055	0.018	0.046	0.087	0.008	0.14	0.006	0.017	< 0.05	0.072	0.11
628SB08[2]	07/31/02	2	< 0.02 UJ	< 0.02 UJ	< 0.02 UJ	0.043 J-	0.034 J-	< 0.02 UJ	0.077 J-	< 0.02 UJ	0.024 J-	< 0.02	< 0.02 UJ	< 0.2	< 0.02 UJ	0.03 J-
628SB08[5]	07/31/02	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
628SB09[2]	08/02/02	2	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
DUP080202A	08/02/02	2.5	< 0.005	0.008	0.014	0.011	0.015	< 0.005	0.024	< 0.005	0.007	< 0.005	0.005	< 0.05	< 0.005	0.018
628SB09[5]	08/02/02	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
628SB10[2.0]	07/30/02	2	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
628SB10[5.0]	07/30/02	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
628SB11[2]	07/31/02	2	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
DUP073102A(MSD)	07/31/02	2.5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
628SB11[5]	07/31/02	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
628SB12[2.0]	01/17/03	2	0.026	0.038	**0.1**	0.065	0.31	0.042	0.099	**0.23**	0.18	0.0048 J	0.25	0.012	0.05	0.16
628SB12[5.5]	01/17/03	5.5	< 0.0018	< 0.0015	< 0.0043	< 0.0033	< 0.0017	< 0.0033	< 0.0017	< 0.0015	< 0.0014	< 0.0028	< 0.0016	< 0.0032	< 0.0023	< 0.0023
DUP011703B[MSD]	01/17/03	6	< 0.0018	< 0.0015	< 0.0043	< 0.0033	< 0.0017	< 0.0033	< 0.0017	< 0.0015	< 0.0014	< 0.0028	< 0.0016	< 0.0032	< 0.0023	< 0.0023
628SB12[10.0]	01/17/03	10	< 0.0015	< 0.0013	< 0.0037	< 0.0028	< 0.0014	< 0.0028	< 0.0014	< 0.0013	< 0.0012	< 0.0024	< 0.0014	< 0.0027	< 0.002	< 0.002
628SB13[2.0]	01/17/03	2	0.0041 J	0.015	0.014	0.0077	0.016	0.0092	0.016	< 0.0013	0.023	< 0.0024	0.0082	< 0.0027	0.014	0.036
628SB13[6.0]	01/17/03	6	< 0.0016	< 0.0014	< 0.004	< 0.003	< 0.0016	< 0.003	< 0.0016	< 0.0014	0.0043 J	< 0.0026	< 0.0015	< 0.0029	< 0.0022	< 0.0022
628SB13[10.0]	01/17/03	10	0.0044 J	0.0096	0.0067 J	0.0078 J	0.026	0.0055 J	0.01	0.0045 J	0.017	< 0.0027	0.01	< 0.003	0.0099	0.027
628SB14[3.0]	01/17/03	3	< 0.0016	< 0.0013	< 0.0039	< 0.0029	< 0.0015	< 0.0029	< 0.0015	< 0.0014	< 0.0012	< 0.0025	< 0.0014	< 0.0028	< 0.0021	< 0.0021
628SB14[6.0]	01/17/03	6	< 0.0021	< 0.0017	< 0.005	< 0.0038	0.012	< 0.0038	< 0.002	< 0.0018	0.0094 J	< 0.0033	0.0062 J	< 0.0037	0.006 J	0.016
628SB14[10.0]	01/17/03	10	< 0.0016	< 0.0013	< 0.0038	< 0.0029	< 0.0015	< 0.0029	< 0.0015	< 0.0014	< 0.0012	< 0.0025	< 0.0014	< 0.0028	< 0.0021	< 0.0021
628SB15[2.0]	01/17/03	2	< 0.0015 UJ	< 0.0013 UJ	< 0.0036 UJ	< 0.0027 UJ	0.0045 J J-	< 0.0027 UJ	0.0054 J J-	< 0.0013 UJ	0.0062 J J-	0.012 J-	< 0.0013 UJ	< 0.0027 UJ	< 0.0019 UJ	0.0069 J J-
628SB15[6.0]	01/17/03	6	< 0.0017	< 0.0014	< 0.0042	< 0.0031	< 0.0016	< 0.0031	< 0.0016	< 0.0015	< 0.0013	< 0.0027	< 0.0015	< 0.0031	< 0.0022	0.0049 J
628SB15[9.5]	01/17/03	9.5	< 0.0016	< 0.0013	< 0.0038	< 0.0029	0.0039 J	< 0.0029	< 0.0015	< 0.0014	< 0.0012	< 0.0025	< 0.0014	< 0.0028	< 0.0021	< 0.0021
DUP011703A	01/17/03	10	< 0.0015	< 0.0013	< 0.0037	< 0.0028	< 0.0015	< 0.0028	< 0.0015	< 0.0013	< 0.0012	< 0.0025	< 0.0014	< 0.0027	< 0.002	< 0.002
628SB16[6.0]	01/23/03	6	< 0.0016	< 0.0014	< 0.0039	< 0.003	< 0.0015	< 0.003	< 0.0015	< 0.0014	< 0.0013	< 0.0026	< 0.0015	< 0.0029	< 0.0021	< 0.0021
628SB16[8.5]	01/23/03	8.5	0.0045 J	0.012	0.013	0.0093	0.15	0.0087 J	0.015	< 0.0016	0.017	< 0.0029	0.0074 J	< 0.0032	0.016	0.022
DUP012303D	01/23/03	9	0.0069 J	0.016	0.015	0.011	0.16	0.0076 J	0.025	< 0.0015	0.019	0.008 J	0.0071 J	< 0.0031	0.038	0.031
628SB16[14.0]	01/23/03	4	< 0.0016	< 0.0014	< 0.0039	< 0.0029	< 0.0015	< 0.0029	< 0.0015	< 0.0014	< 0.0012	< 0.0026	< 0.0014	< 0.0029	< 0.0021	< 0.0021
628SB17[2.0]	01/17/03	2	< 0.0015	< 0.0012	0.011	0.0077	0.04	0.005 J	< 0.0014	0.0085	< 0.0011	< 0.0024	0.016	< 0.0026	< 0.0019	0.0081

Table C-3
Summary of PAH Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	**Sample Date**	**Sample Depth (feet)**	**Anthracene**	**Benzo(a) Anthracene**	**Benzo(a) Pyrene**	**Benzo(b) Fluoranthene**	**Benzo(g,h,i) Perylene**	**Benzo(k) Fluoranthene**	**Chrysene**	**Dibenz(a,h) Anthracene**	**Fluoranthene**	**Fluorene**	**Indeno (1,2,3-c,d) Pyrene**	**Naphthalene**	**Phenanthrene**	**Pyrene**
		Analytical Method	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Cleanup Level[1]			**40**	**0.27**	**0.027**	**0.27**	**40**	**0.27**	**2.7**	**0.19**	**40**	**40**	**0.27**	**40**	**40**	**40**
628SB17[7.0]	01/17/03	7	< 0.0016	0.061	0.0044 J	< 0.0029	0.012	< 0.0029	< 0.0015	< 0.0013	< 0.0012	< 0.0025	0.0067 J	< 0.0028	< 0.0021	0.0054 J
628SB17[10.0]	01/17/03	10	< 0.0015	< 0.0013	< 0.0037	< 0.0028	0.006 J	< 0.0028	< 0.0014	< 0.0013	< 0.0012	< 0.0024	< 0.0014	< 0.0027	< 0.002	0.0065 J
T615SB01[2.0]	08/01/02	2	0.007	0.043	0.024	0.025	0.015	0.019	0.058	0.005	0.067	< 0.005	0.013	< 0.05	0.061	0.068
T615SB01[4.5]	08/01/02	4.5	0.006 J-	0.021 J-	0.018 J-	0.019 J-	0.012 J-	0.012 J-	0.037 J-	< 0.005 UJ	0.041 J-	< 0.005 UJ	0.007 J-	< 0.05 UJ	0.043 J-	0.048 J-
T615SB02[2.0]	07/31/02	2	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
T615SB02[5.0]	07/31/02	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
T615SB03[2.0]	01/15/03	2	0.0094	0.034	**0.045**	0.049	0.046	0.028	0.058	0.0067 J	0.073	< 0.0024	0.022	0.021	0.063	0.076
T615SB03[6.0]	01/15/03	6	< 0.002	< 0.0017	< 0.0049	< 0.0037	< 0.0019	< 0.0037	< 0.0019	< 0.0018	< 0.0016	0.0084 J	< 0.0018	< 0.0036	< 0.0027	< 0.0027
T615SB03[10.0]	01/15/03	10	< 0.0016	< 0.0014	< 0.0039	< 0.0029	< 0.0015	< 0.0029	< 0.0015	< 0.0014	< 0.0012	< 0.0026	< 0.0014	< 0.0029	< 0.0021	< 0.0021
T618SB02[2.0]	08/06/02	2	< 0.005	0.007	0.009	0.011	0.011	< 0.005	0.022	< 0.005	< 0.005 U	< 0.005	< 0.005	< 0.05 UJ	< 0.005 U	< 0.005 U
DUP080602C	08/06/02	2.5	< 0.02 UJ	< 0.02 UJ	< 0.02 UJ	< 0.02 UJ	0.024 J-	< 0.02 UJ	0.024 J-	< 0.02 UJ	< 0.02 UJ	< 0.02 UJ	< 0.02 UJ	< 0.2 UJ	< 0.02 UJ	< 0.02 UJ
T618SB02[5.0]	08/06/02	5	< 0.005	0.008	0.008	0.007	0.006	0.005	0.011	< 0.005	< 0.005 U	< 0.005	0.005	< 0.05 UJ	< 0.005 U	< 0.005 U
S15SB01[2.0]	08/06/02	2	< 0.05	0.11	**0.077**	0.059	0.051	< 0.05	0.15	< 0.05	0.19	< 0.05	< 0.05	< 0.5 UJ	0.19	< 0.05 U
S15SB01[5.0]	08/06/02	5	0.013	0.06	**0.038**	0.035	0.02	0.028	0.083	0.005	0.11	< 0.005	0.017	< 0.05 UJ	< 0.005 U	< 0.005 U
S15SB02[2.0]	08/01/02	2	< 0.005	0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.008	< 0.005	0.009	< 0.005	< 0.005	< 0.05	0.006	0.01
S15SB02[4.0]	08/01/02	4	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
S15SB03[2.0]	08/06/02	2	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.038	< 0.02	< 0.02 U	< 0.02	< 0.02	< 0.2 UJ	< 0.02	< 0.02 U
S15SB03[5.0]	08/06/02	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005 U	< 0.005	< 0.005	< 0.05 UJ	< 0.005	< 0.005 U
S15SB04[2.0]	01/14/03	2	0.0066 J	0.017	0.019	0.015	NA	0.013	0.02	< 0.0013	0.032	< 0.0025	0.011	0.052	0.044	0.037
S15SB04[5.5]	01/14/03	5.5	< 0.0016	< 0.0013	< 0.0038	< 0.0029	< 0.0015	< 0.0029	< 0.0015	< 0.0014	< 0.0012	< 0.0025	< 0.0014	< 0.0028	< 0.0021	< 0.0021
S15SB04[10.0]	01/14/03	10	< 0.0016	< 0.0014	< 0.0039	< 0.003	< 0.0015	< 0.003	< 0.0015	< 0.0014	< 0.0013	< 0.0026	< 0.0015	< 0.0029	< 0.0021	< 0.0021
S15SB05[1.5]	01/15/03	1.5	0.011	0.029	**0.041**	0.038	0.05	0.026	0.053	0.0083	0.049	< 0.0025	0.02	0.0078	0.037	0.071
S15SB05[5.5]	01/15/03	5.5	< 0.0016	0.0058 J	0.0062 J	0.0063 J	0.0055 J	0.0051 J	0.0069 J	< 0.0014	0.0096	< 0.0026	0.0053 J	< 0.0029	0.007 J	0.0095
DUP011503A	01/15/03	6	< 0.0018	0.0052 J	< 0.0043	0.0051 J	< 0.0017	0.0044 J	0.0058 J	< 0.0015	0.0086	< 0.0028	< 0.0016	< 0.0032	0.0074 J	0.008 J
S15SB05[7.0]	01/15/03	7	< 0.0025	< 0.0021	< 0.0061	< 0.0046	< 0.0024	< 0.0046	< 0.0024	< 0.0022	< 0.002	< 0.004	< 0.0023	< 0.0045	< 0.0033	< 0.0033
DUP011503B	01/15/03	7.5	< 0.0026	< 0.0022	< 0.0064	< 0.0049	< 0.0025	< 0.0049	< 0.0025	< 0.0023	< 0.0021	< 0.0042	< 0.0024	< 0.0047	< 0.0035	< 0.0035
S15SB06[3.0]	01/16/03	3	0.0064 J	0.021	0.021	0.013	< 0.0015 U	0.013	0.024	< 0.0014	0.031	< 0.0025	0.012 J+	< 0.0028	0.027	0.043
S15SB06[6.0]	01/16/03	6	0.048	0.14	**0.14**	0.096	0.078	0.093	0.13	0.017 J+	0.25	0.024	0.07 J+	0.0066 J	0.19	0.26
S15SB06[10.0]	01/16/03	10	0.0093 J	0.0089 J	0.0082 J	0.0082 J	< 0.0023 J U	0.0061 J	0.0076 J	< 0.0021	0.026	< 0.0039	< 0.0022	< 0.0044	0.025	0.022
S15SB07[1.5]	01/15/03	1.5	0.15	0.12	**0.12**	0.11	0.078	0.065	0.18	0.022	0.4	0.1	0.048	0.23	0.65	0.33
S15SB07[5.0]	01/15/03	5	< 0.0016	< 0.0013	< 0.0038	< 0.0029	< 0.0015	< 0.0029	< 0.0015	< 0.0014	< 0.0012	< 0.0025	< 0.0014	< 0.0028	< 0.0021	0.0041 J
S15SB07[8.0]	01/15/03	8	< 0.0021	< 0.0018	< 0.0051	< 0.0039	< 0.002	< 0.0039	< 0.002	< 0.0018	< 0.0017	< 0.0034	< 0.0019	< 0.0038	< 0.0028	< 0.0028
600ASB01[2]MSD	08/07/02	2	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05 UJ	< 0.005	< 0.005
DUP080702A[MSD]	08/07/02	2.5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05 UJ	< 0.005	< 0.005
600ASB01[4]MSD	08/07/02	4	0.13	**0.45**	**0.42**	0.19	0.2	0.19	0.46	0.055	0.63	0.01	0.18	0.067	0.27	0.76
600ASB02[2]	08/01/02	2	< 0.005	0.01	0.005	0.006	< 0.005	0.006	0.013	< 0.005	0.009	< 0.005	< 0.005	< 0.05	0.006	0.01
600ASB02[4]	08/01/02	4	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
600ASB03[2.0]	08/01/02	2	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005

Table C-3
Summary of PAH Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	**Sample Date**	**Sample Depth (feet)**	**Anthracene**	**Benzo(a) Anthracene**	**Benzo(a) Pyrene**	**Benzo(b) Fluoranthene**	**Benzo(g,h,i) Perylene**	**Benzo(k) Fluoranthene**	**Chrysene**	**Dibenz(a,h) Anthracene**	**Fluoranthene**	**Fluorene**	**Indeno (1,2,3-c,d) Pyrene**	**Naphthalene**	**Phenanthrene**	**Pyrene**
		Analytical Method	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Cleanup Level[1]			**40**	**0.27**	**0.027**	**0.27**	**40**	**0.27**	**2.7**	**0.19**	**40**	**40**	**0.27**	**40**	**40**	**40**
600ASB03[5.0]	08/01/02	5	< 0.01	0.02	0.024	0.034	0.034	0.012	0.057	0.012	0.034	< 0.01	0.016	< 0.1	0.033	0.041
600ASB04[2]	08/01/02	2	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
600ASB04[5]	08/01/02	5	0.008	0.02	0.023	0.019	0.016	0.018	0.028	< 0.005	0.045	< 0.005	0.012	< 0.05	0.032	0.042
600ASB05[2]	08/01/02	2	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
600ASB05[5]	08/01/02	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
600ASB06[2]	08/01/02	2	< 0.005	0.014	0.014	0.009	< 0.005	0.01	0.018	< 0.005	0.015	< 0.005	< 0.005	< 0.05	< 0.005	0.023
600ASB06[5]	08/01/02	5	< 0.005	0.008	0.007	< 0.005	< 0.005	< 0.005	0.009	< 0.005	0.011	< 0.005	< 0.005	< 0.05	< 0.005	0.015
600ASB07[2.0]	01/17/03	2	0.08	0.092	**0.2**	0.18	0.096	0.052	0.19	0.042	0.22	0.024	0.051	0.015	0.31	0.29
600ASB07[5.5]	01/17/03	5.5	< 0.0015	< 0.0013	< 0.0038	< 0.0029	< 0.0015	< 0.0029	< 0.0015	< 0.0013	< 0.0012	< 0.0025	< 0.0014	< 0.0028	< 0.002	< 0.002
600ASB07[10.0]	01/17/03	10	< 0.0016	< 0.0013	< 0.0039	< 0.0029	< 0.0015	< 0.0029	< 0.0015	< 0.0014	< 0.0012	< 0.0025	< 0.0014	< 0.0029	< 0.0021	< 0.0021
600ASB08[2.0]	01/17/03	2	0.0047 J	0.024	**0.03**	0.044	0.034	0.017	0.045	0.01	0.031	< 0.0023	0.018	< 0.0026	0.014	0.037
600ASB08[5.5]	01/17/03	5.5	0.0066 J	0.033	**0.048**	0.041	0.035	0.03	0.048	0.0084 J	0.039	< 0.003	0.025	0.0056 J	0.024	0.05
DUP011703C	01/17/03	6	< 0.0016	< 0.0013	< 0.0038	< 0.0029	0.004 J	< 0.0029	< 0.0015	< 0.0014	< 0.0012	< 0.0025	< 0.0014	< 0.0028	< 0.0021	0.0054 J
600ASB08[7.0]	01/17/03	7	< 0.0017	< 0.0014	0.0054 J	< 0.0031	< 0.0016	< 0.0031	< 0.0016	< 0.0015	< 0.0013	< 0.0027	< 0.0015	< 0.003	< 0.0022	< 0.0022
600ASB09[2.0]	01/16/03	2	0.044	0.09	**0.1**	0.074	0.056	0.055	0.12	0.014	0.16	0.008	0.036	0.025	0.16	0.21
600ASB09[7.0]	01/16/03	7	0.014	0.054	**0.057**	0.047	0.032	0.037	0.048	0.0066 J	0.088	0.0049 J	0.03	0.011	0.032	0.08
DUP011603C	01/16/03	7.5	< 0.0016	0.0045 J	< 0.0039	< 0.0029	< 0.0015	< 0.0029	< 0.0015	< 0.0014	0.0053 J	0.0043 J	< 0.0014	< 0.0028	< 0.0021	0.005 J
600ASB09[10.0][MSD]	01/16/03	10	< 0.002	< 0.0017	< 0.0049	< 0.0037	< 0.0019	< 0.0037	< 0.0019	< 0.0017	< 0.0016	< 0.0032	< 0.0018	< 0.0036	< 0.0026	< 0.0026
600CSB01[2]	07/31/02	2	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
600CSB01[5]	07/31/02	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
600CSB02[2]	07/31/02	2	< 0.005	0.01	0.009	0.006	< 0.005	0.006	0.012	< 0.005	0.013	< 0.005	< 0.005	< 0.05	0.008	0.018
600CSB02[4.0]	07/31/02	4	< 0.005	0.013	0.011	0.007	0.005	0.007	0.016	< 0.005	0.017	< 0.005	< 0.005	< 0.05	0.01	0.023
600CSB03[2.0]	07/29/02	2	< 0.005 UJ	< 0.005 UJ	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005 UJ	< 0.005	< 0.005 UJ	< 0.005	< 0.005	< 0.05	< 0.005 UJ	< 0.005 UJ
600CSB03[5.0]	07/29/02	5	< 0.005 UJ	< 0.005 UJ	< 0.005 UJ	< 0.005 UJ	< 0.005 UJ	< 0.005 UJ	< 0.005 UJ	< 0.005 UJ	< 0.005 UJ	< 0.005 UJ	< 0.005 UJ	< 0.05 UJ	< 0.005 UJ	< 0.005 UJ
600CSB04[2.0]	07/29/02	2	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.005	< 0.005	< 0.005	< 0.05	< 0.005	0.006
600CSB04[5.0]	07/29/02	5	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.5	0.061	0.085
600CSB05[2.0]	01/13/03	2	< 0.0015	< 0.0013	0.0041 J	< 0.0028	< 0.0015	< 0.0028	< 0.0015	< 0.0013	< 0.0012	< 0.0025	0.0041 J	< 0.0028	< 0.002	< 0.002
600CSB05[8.0]	01/13/03	8	< 0.0016	< 0.0014	0.0041 J	< 0.003	< 0.0015	< 0.003	< 0.0015	< 0.0014	< 0.0013	< 0.0026	< 0.0015	< 0.0029	< 0.0021	< 0.0021
600CSB05[10.0]	01/13/03	10	< 0.0017	< 0.0014	0.0042 J	< 0.0031	< 0.0016	< 0.0031	< 0.0016	< 0.0014	< 0.0013	< 0.0027	< 0.0015	< 0.003	< 0.0022	< 0.0022
600CSB06[2.0]	01/13/03	2	0.11	**0.39**	**0.34**	**0.55**	0.12	0.19	0.45	0.038	0.77	0.041	0.11	0.018	0.61	0.74
600CSB06[5.0]	01/13/03	5	< 0.0016	< 0.0013	0.0041 J	< 0.0029	< 0.0015	< 0.0029	< 0.0015	< 0.0014	< 0.0012	< 0.0025	0.0041 J	< 0.0028	< 0.0021	< 0.0021
600CSB06[10.0]	01/13/03	10	< 0.0023	< 0.002	0.0066 J	< 0.0042	< 0.0022	< 0.0042	< 0.0022	< 0.002	< 0.0018	< 0.0037	0.0064 J	< 0.0041	< 0.003	< 0.003
600CSB07[2.0]	01/13/03	2	< 0.0054	< 0.0046	**0.035**	0.098	0.028 J+	0.027	0.017 J	0.017 J	0.021 J	< 0.0086	0.02 J	< 0.0096	< 0.0071	0.067
600CSB07[5.5]	01/13/03	5.5	< 0.0016	< 0.0013	0.0041 J	< 0.0029	< 0.0015	< 0.0029	< 0.0015	< 0.0014	< 0.0012	< 0.0025	0.004 J	< 0.0028	< 0.0021	< 0.0021
600CSB07[10.0]	01/13/03	10	< 0.0017	< 0.0015	0.0047 J	< 0.0032	< 0.0017	< 0.0032	< 0.0017	< 0.0015	< 0.0014	< 0.0028	0.0046 J	< 0.0031	< 0.0023	< 0.0023
600FDSSB01[2.0]	08/01/02	2	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.5	< 0.05	< 0.05
600FDSSB01[3.5]	08/01/02	3.5	< 0.04 UJ	0.1 J-	**0.065 J-**	0.072 J-	0.047 J-	< 0.04 UJ	0.17 J-	< 0.04 UJ	0.18 J-	< 0.04 UJ	< 0.04 UJ	< 0.4 UJ	0.2 J-	0.2 J-
600FDSSB02[2.0]	01/15/03	2	< 0.0014 UJ	< 0.0012 UJ	< 0.0035 UJ	< 0.0026 UJ	< 0.0013 UJ	< 0.0026 UJ	0.0067 J J-	< 0.0012 UJ	< 0.0011 UJ	< 0.0023 UJ	< 0.0013 UJ	< 0.0025 UJ	0.0055 J J-	0.0063 J J-

Table C-3
Summary of PAH Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	Sample Date	Sample Depth (feet)	Anthracene	Benzo(a) Anthracene	Benzo(a) Pyrene	Benzo(b) Fluoranthene	Benzo(g,h,i) Perylene	Benzo(k) Fluoranthene	Chrysene	Dibenz(a,h) Anthracene	Fluoranthene	Fluorene	Indeno (1,2,3-c,d) Pyrene	Naphthalene	Phenanthrene	Pyrene
		Analytical Method	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Cleanup Level[1]			**40**	**0.27**	**0.027**	**0.27**	**40**	**0.27**	**2.7**	**0.19**	**40**	**40**	**0.27**	**40**	**40**	**40**
600FDSSB02[5.5]	01/15/03	5.5	0.027	0.051	**0.08**	0.12	0.34	0.092	0.051	0.046	0.054	< 0.0026	0.26	0.092	0.093	0.043
600FDSSB02[10.0]	01/15/03	10	< 0.0016	< 0.0014	< 0.004	< 0.003	< 0.0016 U	< 0.003	< 0.0016	< 0.0014	0.005 J	< 0.0026	< 0.0015	< 0.0029	< 0.0022	0.0044 J
600RRSB01[2.0]	08/05/02	2	< 0.005	0.014	0.016	0.018	0.02	0.008	0.026	< 0.005	0.036	< 0.005	0.011	0.005	0.033	0.041
DUP080502B	08/05/02	2.5	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.2	< 0.02	0.02
600RRSB01[5.5]	08/05/02	5.5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
600RRSB02[2.0]	08/05/02	2	0.015	0.056	**0.084**	0.074	0.078	0.071	0.069	0.012	0.15	0.011	0.063	< 0.05	0.013	0.18
600RRSB02[5.0]	08/05/02	5	0.006	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.017	0.019	< 0.005	< 0.05	0.043	0.013
600RRSB03[2.0]	08/05/02	2	0.71	**0.73**	**0.37**	**0.31**	< 0.3	**< 0.3**	1.1	< 0.3	0.93	0.61	**< 0.3**	< 3	4	1.8
600RRSB03[5.0]	08/05/02	5	0.026	0.031	0.017	0.014	0.013	< 0.005	0.045	< 0.005	0.043	0.026	0.006	< 0.05	0.17	0.079
600RRSB04[2]MSD	08/07/02	2	< 0.02	0.068	**0.091**	0.067	0.096	0.054	0.097	< 0.02	0.17	< 0.02	0.069	< 0.2	0.095	0.2
600RRSB04[4]MSD	08/07/02	4	< 0.01	0.041	**0.061**	0.045	0.054	0.034	0.053	< 0.01	0.094	< 0.01	0.039	< 0.1	0.064	0.11
600RRSB05[2.0]	01/16/03	2	< 0.0017	< 0.0014	< 0.0041	< 0.0031	< 0.0016	< 0.0031	< 0.0016	< 0.0015	< 0.0013	< 0.0027	< 0.0015	< 0.003	< 0.0022	< 0.0022
600RRSB05[6.0]	01/16/03	6	< 0.0016	0.0041 J	< 0.0039	< 0.003	< 0.0015	< 0.003	< 0.0015	< 0.0014	0.0054 J	< 0.0026	< 0.0015	< 0.0029	< 0.0021	0.0067 J
600RRSB05[10.0]	01/16/03	10	0.007 J	0.022	**0.031**	0.021	0.029	0.016	0.028	0.0069 J	0.036	< 0.0025	0.014	< 0.0028	0.019	0.045
600RRSB06[2.0]	01/21/03	2	0.022	0.055	**0.067**	0.065	0.055	0.041	0.1	0.016	0.14	< 0.0047	0.029	< 0.0053	0.13	0.15
600RRSB06[5.5]	01/21/03	5.5	0.0073 J	0.043	**0.061 J-**	0.083 J-	0.03 J-	0.026 J-	0.047	0.014 J-	0.053	< 0.0025	0.023 J-	< 0.0028	0.031	0.099 J+
DUP012103D	01/21/03	6	< 0.0016	0.0053 J	0.01	0.0096	0.0063 J	0.0045 J	0.0046 J	< 0.0014	0.0062 J	< 0.0026	0.0089	< 0.0029	0.0057 J	0.01 J+
600RRSB06[10.0]	01/21/03	10	< 0.0016	< 0.0013	0.0062 J	0.0052 J	< 0.0015	< 0.0029	< 0.0015	< 0.0014	< 0.0012	< 0.0025	< 0.0014	< 0.0028	< 0.0021	< 0.0021
600RRSB07[2.0]	01/22/03	2	0.016	0.057	**0.046**	0.085	0.078	0.036	0.16	0.023	0.096	< 0.0046	0.026	0.016	0.11	0.17
600RRSB07[7.0]	01/22/03	7	< 0.0016	< 0.0014	< 0.0039	< 0.0029	< 0.0015	< 0.0029	< 0.0015	< 0.0014	< 0.0012	< 0.0026	< 0.0014	< 0.0029	< 0.0021	< 0.0021
600RRSB07[9.5]	01/22/03	9.5	0.032	0.095	**0.12**	0.12	0.08	0.041	0.1	0.019	0.16	0.017	0.059	0.01	0.079	0.31
600RRSB08[2.0]	01/21/03	2	0.025	**0.27**	**0.3**	0.22	0.16	0.17	0.36	0.055	0.2	< 0.0048	0.1	0.012 J	0.12	0.36
600RRSB08[5.5]	01/21/03	5.5	< 0.0015	< 0.0013	0.0084	0.0074 J	0.0058 J	< 0.0029	< 0.0015	< 0.0013	0.0039 J	< 0.0025	0.0082	< 0.0028	< 0.002	0.014 J+
DUP012103B	01/21/03	6	< 0.0016	< 0.0013	0.0082	0.0073 J	0.006 J	< 0.0029	< 0.0015	< 0.0014	< 0.0012	< 0.0025	0.0083	< 0.0028	< 0.0021	0.0076 J+
600RRSB08[10.0]	01/21/03	10	< 0.0026	< 0.0022	0.012	0.013	< 0.0024	< 0.0047	< 0.0024	< 0.0022	0.012	0.008 J	< 0.0023	< 0.0046	0.015	0.015 J+
600RRSB09[2.0]	01/22/03	2	0.035 J	0.072 J-	**0.24 J-**	**0.51 J-**	0.17 J-	0.1 J-	0.35 J-	< 0.01 R	0.091	< 0.019	< 0.011 R	< 0.021	0.049 J	0.36 J-
600RRSB09[7.5][MSD]	01/22/03	7.5	< 0.0016	< 0.0013	< 0.0038	< 0.0029	< 0.0015	< 0.0029	< 0.0015	< 0.0014	< 0.0012	< 0.0025	< 0.0014	< 0.0028	< 0.0021	< 0.0021
600RRSB09[9.5]	01/22/03	9.5	0.017	0.051	**0.078**	0.074	0.052	0.027	0.057	0.017	0.079	0.0088 J	0.043	0.01 J	0.04	0.18
600SDSB01[2.0]	08/06/02	2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	**< 0.2**	< 0.2	< 0.2	< 0.2	< 2 UJ	< 0.2	< 0.2
600SDSB01[5.0]	08/06/02	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05 UJ	< 0.005	< 0.005
600SDSB02[2.0]	08/01/02	2	< 0.06	< 0.06	< 0.06	< 0.06	0.085	< 0.06	0.075	< 0.06	< 0.06	< 0.06	< 0.06	< 0.6	< 0.06	< 0.06
600SDSB02[5.0]	08/01/02	5	< 0.005	0.008	0.007	0.01	0.006	< 0.005	0.018	< 0.005	0.015	< 0.005	< 0.005	< 0.05	0.009	0.018
600SDSB03[2.0]	08/06/02	2	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.007	< 0.005	< 0.005	< 0.05	0.005	0.008
600SDSB03[5.5]	08/06/02	5.5	< 0.005	< 0.005	< 0.005	< 0.005	0.007	< 0.005	0.009	< 0.005	0.006	< 0.005	< 0.005	< 0.05	< 0.005	0.007
600SDSB04[2.0]	08/06/02	2	< 0.005 UJ	< 0.005 UJ	< 0.005 UJ	< 0.005 UJ	< 0.005 UJ	< 0.005 UJ	< 0.005 UJ	< 0.005 UJ	< 0.005 UJ	< 0.005	< 0.005 UJ	< 0.05	< 0.005 UJ	< 0.005 UJ
DUP080602B	08/06/02	2.5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005

Table C-3
Summary of PAH Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	Sample Date	Sample Depth (feet)	Anthracene	Benzo(a) Anthracene	Benzo(a) Pyrene	Benzo(b) Fluoranthene	Benzo(g,h,i) Perylene	Benzo(k) Fluoranthene	Chrysene	Dibenz(a,h) Anthracene	Fluoranthene	Fluorene	Indeno (1,2,3-c,d) Pyrene	Naphthalene	Phenanthrene	Pyrene
		Analytical Method	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Cleanup Level[1]			**40**	**0.27**	**0.027**	**0.27**	**40**	**0.27**	**2.7**	**0.19**	**40**	**40**	**0.27**	**40**	**40**	**40**
600SDSB04[5.0]	08/06/02	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
600SDSB05[2]	08/07/02	2	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
600SDSB05[5]	08/07/02	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
LTTDSB01[2.5]	07/29/02	2.5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
LTTDSB01[5.0]	07/29/02	5	0.013	0.068	**0.05**	0.024	0.024	0.034	0.08	0.005	0.091	< 0.005	0.021	< 0.05	0.062	0.12
LTTDSB02[2.0]	07/29/02	2	0.011 J-	0.042 J-	**0.035 J-**	0.027 J-	0.027 J-	0.027 J-	0.044 J-	< 0.005 UJ	0.082 J-	< 0.005	0.021 J-	< 0.05	0.048 J-	0.095 J-
LTTDSB02[5.0]	07/29/02	5	< 0.005 UJ	< 0.005 UJ	< 0.005 UJ	< 0.005 UJ	< 0.005 UJ	< 0.005 UJ	< 0.005 UJ	< 0.005 UJ	< 0.005 UJ	< 0.005	< 0.005 UJ	< 0.05	< 0.005 UJ	< 0.005 UJ
LTTDSB03[2.0]	07/29/02	2	< 0.005 UJ	0.007 J-	0.006 J-	< 0.005 UJ	< 0.005 UJ	< 0.005 UJ	0.009 J-	< 0.005 UJ	0.011 J-	< 0.005 UJ	< 0.005 UJ	< 0.05 UJ	0.007 J-	0.015 J-
LTTDSB03[5.0]	07/29/02	5	< 0.005 UJ	< 0.005 UJ	< 0.005 UJ	< 0.005 UJ	< 0.005 UJ	< 0.005 UJ	< 0.005 UJ	< 0.005 UJ	< 0.005 UJ	< 0.005	< 0.005 UJ	< 0.05	< 0.005 UJ	< 0.005 UJ
LTTDSB04[2.0]	07/29/02	2	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.006	< 0.005	< 0.005	< 0.05	< 0.005	0.007
LTTDSB04[5.0]	07/29/02	5	< 0.005 UJ	< 0.005 UJ	< 0.005 UJ	< 0.005 UJ	< 0.005 UJ	< 0.005 UJ	< 0.005 UJ	< 0.005 UJ	< 0.005 UJ	< 0.005 UJ	< 0.005 UJ	< 0.05 UJ	< 0.005 UJ	0.005 J-
LTTDSB05[2.0]	07/29/02	2	< 0.02 UJ	< 0.02 UJ	< 0.02	< 0.02	< 0.02	< 0.02	0.027 J-	< 0.02	< 0.02 UJ	< 0.02	< 0.02	< 0.2	< 0.02 UJ	0.023 J-
LTTDSB05[5.0]	07/29/02	5	< 0.005 UJ	< 0.005 UJ	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005 UJ	< 0.005	< 0.005 UJ	< 0.005	< 0.005	< 0.05	< 0.005 UJ	< 0.005 UJ
LTTDSB06[2.0]	07/29/02	2	< 0.005 UJ	< 0.005 UJ	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005 UJ	< 0.005	< 0.005 UJ	< 0.005	< 0.005	< 0.05	< 0.005 UJ	< 0.005 UJ
LTTDSB06[4.5]	07/29/02	4.5	< 0.005 UJ	< 0.005 UJ	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005 UJ	< 0.005	< 0.005 UJ	< 0.005	< 0.005	< 0.05	< 0.005 UJ	< 0.005 UJ
LTTDSB07[2.0]	01/13/03	2	< 0.0015	< 0.0013	0.006 J	< 0.0028	< 0.0014	< 0.0028	< 0.0014	< 0.0013	< 0.0012	< 0.0024	0.0049 J	< 0.0027	< 0.002	0.0037 J
LTTDSB07[7.5]	01/13/03	7.5	< 0.0016	0.01	0.013	0.01	0.0044 J J+	0.0034 J	0.011	0.0044 J	0.02	< 0.0026	0.0081	< 0.0029	0.02	0.022
LTTDSB07[10.0]	01/13/03	10	< 0.0016	< 0.0013	0.0071 J	0.0043 J	< 0.0015	< 0.0029	0.0042 J	< 0.0013	0.0047 J	< 0.0025	0.0059 J	< 0.0028	< 0.0021	0.0056 J
LTTDSB08[3.0]	01/13/03	3	< 0.0015	< 0.0013	0.0048 J	0.0037 J	< 0.0014	< 0.0027	< 0.0014	0.0039 J	< 0.0012	< 0.0024	0.0042 J	< 0.0027	< 0.0019	< 0.0019
LTTDSB08[5.5]	01/13/03	5.5	< 0.0015	< 0.0013	0.0045 J	< 0.0029	< 0.0015	< 0.0029	< 0.0015	< 0.0013	< 0.0012	< 0.0025	0.0042 J	< 0.0028	< 0.002	< 0.002
DUP011303B	01/13/03	6	< 0.0016	< 0.0013	0.004 J	< 0.0029	< 0.0015	< 0.0029	< 0.0015	< 0.0014	< 0.0012	< 0.0025	0.0041 J	< 0.0028	< 0.0021	< 0.0021
LTTDSB08[10.0]	01/13/03	10	< 0.0015	< 0.0013	0.0047 J	< 0.0028	< 0.0015	< 0.0028	< 0.0015	< 0.0013	< 0.0012	< 0.0025	0.0042 J	< 0.0027	< 0.002	< 0.002
LTTDSB09[2.5]	01/13/03	2.5	0.0042 J	0.017	0.021	0.027	0.012	0.0093	0.022	0.0071 J	0.024	< 0.0024	0.012	< 0.0027	0.022	0.03
LTTDSB09[5.5]	01/13/03	5.5	< 0.0016	0.0046 J	0.0083	0.006 J	< 0.0015	< 0.0029	0.0039 J	0.0056 J	< 0.0012	< 0.0025	0.007 J	< 0.0028	< 0.0021	< 0.0021
LTTDSB09[10.0]	01/13/03	10	< 0.0016	< 0.0014	0.0066 J	0.0041 J	< 0.0015	< 0.0029	< 0.0015	0.0052 J	< 0.0012	< 0.0026	0.0064 J	< 0.0029	< 0.0021	< 0.0021
LTTDSB10[2.5]	01/13/03	2.5	< 0.0016	< 0.0013	0.0041 J	< 0.0029	< 0.0015	< 0.0029	< 0.0015	< 0.0013	< 0.0012	< 0.0025	0.0043 J	< 0.0028	< 0.0021	< 0.0021
DUP011303A	01/13/03	3	< 0.0014	< 0.0012	0.004 J	< 0.0026	< 0.0013	< 0.0026	< 0.0013	< 0.0012	< 0.0011	< 0.0022	0.004 J	< 0.0025	< 0.0018	< 0.0018
LTTDSB10[5.5]	01/13/03	5.5	< 0.0015	< 0.0013	< 0.0038	< 0.0029	< 0.0015	< 0.0029	< 0.0015	< 0.0013	< 0.0012	< 0.0025	< 0.0014	< 0.0028	< 0.002	< 0.002
LTTDSB10[10.0]	01/13/03	10	< 0.0017	< 0.0014	< 0.0041	< 0.0031	< 0.0016	< 0.0031	< 0.0016	< 0.0014	< 0.0013	< 0.0027	< 0.0015	< 0.003	< 0.0022	< 0.0022
600SB101[2]	08/06/02	2	0.099	**0.5**	**0.43**	**1.1**	0.22	**0.4**	1.4	0.059	0.21	< 0.02	0.19	< 0.2 UJ	0.012	0.42
DUP080602A	08/06/02	2.5	< 0.005	0.009	0.011	0.012	0.009	0.009	0.016	< 0.005	0.012	< 0.005	0.006	< 0.05 UJ	0.007	0.014
600SB101[4]	08/06/02	4	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.074 J-	< 0.005	< 0.005
600SB102[2]	08/06/02	2	0.048	**0.3**	**0.16 J+**	**0.58**	0.11 J+	**0.35**	0.55	0.039 J+	0.79	0.014	0.098 J+	< 0.05 UJ	0.19	0.79
600SB102[4]	08/06/02	4	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.007	< 0.005	< 0.005	< 0.05 UJ	< 0.005	0.008
600SB103[2]	08/05/02	2	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.008	< 0.005	< 0.005	< 0.05	0.007	0.009
600SB103[4]	08/05/02	4	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
DUP080502D	08/05/02	4	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
600SB104[2]	08/06/02	2	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05 UJ	< 0.005	< 0.005

Table C-3
Summary of PAH Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	**Sample Date**	**Sample Depth (feet)**	**Anthracene**	**Benzo(a) Anthracene**	**Benzo(a) Pyrene**	**Benzo(b) Fluoranthene**	**Benzo(g,h,i) Perylene**	**Benzo(k) Fluoranthene**	**Chrysene**	**Dibenz(a,h) Anthracene**	**Fluoranthene**	**Fluorene**	**Indeno (1,2,3-c,d) Pyrene**	**Naphthalene**	**Phenanthrene**	**Pyrene**
		Analytical Method	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Cleanup Level[1]			**40**	**0.27**	**0.027**	**0.27**	**40**	**0.27**	**2.7**	**0.19**	**40**	**40**	**0.27**	**40**	**40**	**40**
600SB104[4]	08/06/02	4	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05 UJ	< 0.005	< 0.005
600SB105[2]	08/05/02	2	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
600SB105[4]	08/05/02	4	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
DUP080502A	08/05/02	4.5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
600SB106[2]	08/05/02	2	< 0.005	0.066	**0.044**	0.069	0.032	0.046	0.067	0.01	0.097	< 0.005	0.031	< 0.05	0.015	0.093
600SB106[4]	08/05/02	4	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.005	< 0.005	0.006	< 0.005	< 0.005	< 0.05	< 0.005	0.007
600SB107[2]	08/02/02	2	< 0.005	0.011	0.014	0.01	0.01	0.01	0.013	< 0.005	0.018	< 0.005	0.007	< 0.05	0.007	0.021
600SB107[4]	08/02/02	4	< 0.005	0.035	**0.06**	0.043	0.037	0.032	0.042	0.009	0.043	< 0.005	0.03	< 0.05	0.026	0.061
600SB108[2]	08/02/02	2	< 0.005	0.006	0.007	0.005	0.006	0.005	0.007	< 0.005	0.011	< 0.005	< 0.005	< 0.05	0.007	0.013
600SB108[4]	08/02/02	4	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005
600SB109[2]	08/05/02	2	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.005	< 0.005	< 0.005	< 0.05	0.008	0.006
600SB109[4]	08/05/02	4	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005

Notes
[1] Cleanup Levels are found in Table 3.
Bold - values indicate concentration exceeding screening levels.
DUP prefix indicates blind duplicate sample; parent sample precedes duplicate sample.
mg/kg - milligrams per kilogram
MSD - Matrix spike duplicate
MSD indicates to the laboratory which samples were to be used for the MSD quality control sample analyses. These are not matrix spike results.
NA -Not Analyzed
PAHs - polycyclic aromatic hydrocarbons
U - Data validation qualifier, "The analyte was analyzed for, but was not detected above the reported sample quantitation limit."
J - Data validation qualifier, "The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample."
J+ - Data validation qualifier, "The analyte was positively identified; the associated numerical value is biased high due to a high surrogate recovery and should be considered an approximate concentration of the analyte in the sample."
J- - Data validation qualifier, "The analyte was positively identified; the associated numerical values is biased low due to a low surrogate recovery and should be considered an approximate concentration of the analyte in the sample."
UJ - Data validation qualifier, "The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample."

Table C-4
Summary of PCB Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	**Sample Date**	**Sample Depth (feet)**	**PCB-1016**	**PCB-1221**	**PCB-1232**	**PCB-1242**	**PCB-1248**	**PCB-1254**
		Analytical Method	SW8082	SW8082	SW8082	SW8082	SW8082	SW8082
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Screening Level[1]			**0.23**	**0.23**	**0.23**	**0.23**	**0.23**	**0.23**
605SB01[2.5]	01/22/03	2.5	< 0.037 UJ	< 0.037 UJ	< 0.037 UJ	< 0.037 UJ	< 0.037 UJ	< 0.037 UJ
626SB01[2]	07/29/02	2	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04
626SB01[4]	07/29/02	4	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
626SB02[2]	07/29/02	2	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
626SB02[4]	07/29/02	4	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
626SB03[2]	07/29/02	2	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
626SB03[5]	07/29/02	5	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
628SB09[2]	08/02/02	2	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
DUP080202A	08/02/02	2.5	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
628SB09[5]	08/02/02	5	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02

Notes
[1] Screening Levels were obtained from Table 1a of the *Draft Site Investigation Report Commissary/Post Exchange Study Area Presidio of San Francisco, California* (Treadwell& Rollo, 2003c).
DUP prefix indicates blind duplicate sample; parent sample precedes duplicate sample.
mg/kg - milligrams per kilogram
NE - Not established
PCB - Polychlorinated biphenyl
UJ - Data validation qualifier, "The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample."

Table C-5
Summary of Metals Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	**Sample Date**	**Sample Depth (feet)**	**Arsenic**	**Cadmium**	**Chromium**	**Copper**	**Lead**	**Nickel**	**Zinc**
		Analytical Method	SW6020	SW6020	SW6020	SW6020	SW6020	SW6020	SW6020
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Cleanup Level[1]			**5.9**	**1.7**	**120**	**43**	**300**	**71**	**66**
601SB02[2.5]	08/05/02	2.5	2.9	< 0.5	37 J	17	56	53 J	**75**
601SB02[4.5]	08/05/02	4.5	1.8	< 0.5	22 J	5.2	< 4	31 J	14
601SB03[3.0]	01/16/03	3	NA	NA	NA	NA	2	NA	NA
601SB03[8.0]	01/16/03	8	NA	NA	NA	NA	130	NA	NA
601SB03[11.0]	01/16/03	11	NA	NA	NA	NA	2.4	NA	NA
603SB01[2.0]	08/05/02	2	2.4	< 0.5	37 J	6.6	9.5	38 J	27
603SB01[5.0]	08/05/02	5	1.9	< 0.5	37 J	4.5	< 4	53 J	21
604SB01[4.5]	07/31/02	4.5	1.6	< 0.5	15	**130**	30	31	52
604SB01[6.0]	07/31/02	6	2.5	< 0.5	73	**86**	31	66	64
604SB02[2.0]	08/05/02	2	3.1	< 0.5	51 J	26	27 J	**180 J**	50
604SB02[6.0]	08/05/02	6	5.6	0.6	24 J	**60**	200 J	65 J	**520**
604SB03[2.0]	01/14/03	2	NA	NA	30 J-	9.6 J-	3.3	28 J-	34 J+
604SB03[3.5]	01/14/03	3.5	NA	NA	15 J-	**48 J-**	**1,300**	43 J-	47 J+
604SB03[5.5]	01/14/03	5.5	NA	NA	18 J-	42 J-	150	57 J-	**120 J+**
604SB04[2.0]	01/14/03	2	NA	NA	34 J-	27 J-	27	62 J-	**78 J+**
604SB04[5.5]	01/14/03	5.5	NA	NA	65 J-	23 J-	34	70 J-	**140 J+**
604SB04[7.0]	01/14/03	7	NA	NA	45 J-	9.7 J-	6.3	30 J-	31 J+
604SB05[3.0]	01/16/03	3	NA	NA	69	21 J	31	**84**	57 J-
DUP011603A	01/16/03	3.5	NA	NA	60	23 J	34	**88**	63 J-
604SB05[6.0]	01/16/03	6	NA	NA	23	20 J	30	32	**84 J-**
604SB05[8.0]	01/16/03	8	NA	NA	54	32 J	69	50	**500 J-**
604SB06[3.0]	01/16/03	3	NA	NA	**230**	23 J	45	**270**	**69 J-**
604SB06[5.5]	01/16/03	5.5	NA	NA	40	4.4 J	2.3	56	18 J-
604SB06[7.5]	01/16/03	7.5	NA	NA	44	24 J	23	55	**82 J-**
604SB07[2.0]	01/14/03	2	NA	NA	54 J-	17 J-	24	38 J-	54 J+
604SB07[3.5]	01/14/03	3.5	NA	NA	44 J-	17 J-	33	33 J-	58 J+

Table C-5
Summary of Metals Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	**Sample Date**	**Sample Depth (feet)**	**Arsenic**	**Cadmium**	**Chromium**	**Copper**	**Lead**	**Nickel**	**Zinc**
		Analytical Method	SW6020	SW6020	SW6020	SW6020	SW6020	SW6020	SW6020
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Cleanup Level[1]			**5.9**	**1.7**	**120**	**43**	**300**	**71**	**66**
604SB07[5.5]	01/14/03	5.5	NA	NA	39 J-	12 J-	6.1	46 J-	41 J+
604SB09[2.0]	01/14/03	2	NA	NA	20 J-	**61 J-**	2.2	36 J-	**110 J+**
604SB09[4.0]	01/14/03	4	NA	NA	34 J-	3.6 J-	1.6	20 J-	21 J+
604SB09[10.0]	01/14/03	10	NA	NA	20 J-	3.1 J-	1.5	21 J-	14 J+
605SB01[2.5]	01/22/03	2.5	NA	NA	100	**64**	13	**92**	55
605SB01[5.0]	01/22/03	5	NA	NA	47	4.5	1.5	24	17
605SB01[10.0]	01/22/03	10	NA	NA	57	17	2.8	44	28
605SB02[2.0]	01/16/03	2	NA	NA	52 J-	14 J-	15 J-	45 J-	36 J-
605SB02[5.0]	01/16/03	5	NA	NA	26 J-	3.5 J-	1.5 J-	16 J-	18 J-
DUP011603B[MSD]	01/16/03	5.5	NA	NA	35	3.5 J	1.6	16	24 J-
605SB02[8.0]	01/16/03	8	NA	NA	110	31 J	56	**89**	**93 J-**
609SB01[2.0]	01/14/03	2	NA	NA	42 J-	24 J-	12	38 J-	36 J+
609SB01[4.0]	01/14/03	4	NA	NA	47 J-	3.9 J-	1.9	35 J-	15 J+
609SB01[8.0]	01/14/03	8	NA	NA	71 J-	5.4 J-	4.2	54 J-	22 J+
610SB01[2.0]	08/05/02	2	NA	0.6	26 J	16	47 J	27 J	61
DUP080502E[MSD]	08/05/02	2.5	NA	< 0.5	33 J	13	51 J	42 J	54
610SB01[5.0]	08/05/02	5	NA	< 0.5	30 J	25	68 J	40 J	**130**
610SB02[2.0]	01/16/03	2	NA	NA	60 J-	NA	13 J-	NA	35 J-
610SB02[5.0]	01/16/03	5	NA	NA	17 J-	NA	7.6 J-	NA	19 J-
610SB02[7.5]	01/16/03	7.5	NA	NA	24 J-	NA	1.6 J-	NA	17 J-
610SB03[2.0]	01/14/03	2	NA	NA	50	NA	24	NA	56 J-
610SB03[5.5]	01/14/03	5.5	NA	NA	32	NA	3.1	NA	20 J-
610SB03[8.5]	01/14/03	8.5	NA	NA	80	NA	76	NA	**130 J-**
610SB04[2.0]	01/14/03	2	NA	NA	17	NA	4.1	NA	**98 J-**
610SB04[6.0]	01/14/03	6	NA	NA	26	NA	17	NA	32 J-
610SB04[7.5]	01/14/03	7.5	NA	NA	76	NA	14	NA	62 J-

Table C-5
Summary of Metals Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	**Sample Date**	**Sample Depth (feet)**	**Arsenic**	**Cadmium**	**Chromium**	**Copper**	**Lead**	**Nickel**	**Zinc**
		Analytical Method	SW6020	SW6020	SW6020	SW6020	SW6020	SW6020	SW6020
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Cleanup Level[1]			**5.9**	**1.7**	**120**	**43**	**300**	**71**	**66**
613SB01[2.0]	08/02/02	2	NA	< 0.5	45	40	17	68	**69**
613SB01[5.0]	08/02/02	5	NA	< 0.5	40	10	7.4	24	29
613SB02[2.0]	08/02/02	2	NA	< 0.5	100	27	58	**180**	**68**
613SB02[5.0]	08/02/02	5	NA	< 0.5	97	25	44	**350**	**74**
613SB03[2.0]	08/02/02	2	NA	< 0.5	43	**56**	8.1	61	55
DUP080202C	08/02/02	2.5	NA	< 0.5	20	11	< 4	27	27
613SB03[5.0]	08/02/02	5	NA	< 0.5	11	15	9.1	19	34
613SB04[2.0]	08/02/02	2	NA	< 0.5	67	23	82	**110**	**100**
613SB04[4.5]	08/02/02	4.5	NA	< 0.5	27	5.6	14	36	18
613SB05[2.0]	08/02/02	2	NA	< 0.5	39	11	31	36	48
613SB05[4.0]	08/02/02	4	NA	< 0.5	26	5.9	6.7	36	26
613SB06[2.0]	08/02/02	2	NA	< 0.5	19	6.8	< 4	17	**69**
613SB06[5.0]	08/02/02	5	NA	< 0.5	50	28	43	59	**89**
613SB07[2]	07/30/02	2	NA	1.1	84	33 J	**400 J**	**100**	**280 J**
613SB07[5]	07/30/02	5	NA	< 0.5	37	17 J	18 J	44	47 J
613SB08[2.0]	01/21/03	2	NA	NA	43 J+	NA	30 J-	60	59 J-
613SB08[7.0]	01/21/03	7	NA	NA	33 J+	NA	2 J-	46	16 J-
DUP012103A[MSD]	01/21/03	6.5	NA	NA	25 J+	NA	49 J-	32	**96 J-**
613SB08[10.0]	01/21/03	10	NA	NA	28 J+	NA	3.9 J-	44	23 J-
613SB09[2.0][MSD]	01/17/03	2	NA	NA	50 J+	NA	61 J-	**74 J+**	**85 J-**
613SB09[5.5]	01/17/03	5.5	NA	NA	67 J+	NA	1.7 J-	62 J+	18 J-
613SB09[7.5]	01/17/03	7.5	NA	NA	68 J+	NA	14 J-	52 J+	64 J-
613SB10[2.5]	01/22/03	2.5	NA	NA	65	NA	5.5	39	38
613SB10[5.5]	01/22/03	5.5	NA	NA	38	NA	1.7	53	16
DUP012203A	01/22/03	6	NA	NA	22	NA	1.8	31	15
613SB10[7.5]	01/22/03	7.5	NA	NA	33	NA	8.3	42	25

Table C-5
Summary of Metals Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	**Sample Date**	**Sample Depth (feet)**	**Arsenic**	**Cadmium**	**Chromium**	**Copper**	**Lead**	**Nickel**	**Zinc**
		Analytical Method	SW6020	SW6020	SW6020	SW6020	SW6020	SW6020	SW6020
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Cleanup Level[1]			**5.9**	**1.7**	**120**	**43**	**300**	**71**	**66**
613SB11[2.0]	01/21/03	2	NA	NA	34 J+	NA	12 J-	37 J-	41 J-
613SB11[6.0]	01/21/03	6	NA	NA	44 J+	NA	3.4 J-	34 J-	19 J-
613SB11[8.0]	01/21/03	8	NA	NA	81 J+	NA	74 J-	61 J-	**70 J-**
613SB12[2.0]	01/21/03	2	NA	NA	73 J+	NA	41 J-	**120 J-**	57 J-
613SB12[5.5]	01/21/03	5.5	NA	NA	24 J+	NA	7.7 J-	27 J-	25 J-
DUP012103C[MSD]	01/21/03	6	NA	NA	36 J+	NA	4.8 J-	32	21 J-
613SB12[7.5][MSD]	01/21/03	7.5	NA	NA	71	NA	7.6	49	66
616SB01[2.0]	07/30/02	2	NA	NA	NA	NA	28	NA	NA
DUP073002D(MSD)	07/30/02	1.5	NA	NA	NA	NA	13	NA	NA
616SB01[4.0]	07/30/02	4	NA	NA	NA	NA	28	NA	NA
616SB02[2.0]	07/30/02	2	NA	NA	NA	NA	10	NA	NA
616SB02[5.0]	07/30/02	5	NA	NA	NA	NA	36	NA	NA
616SB03[2.0]	07/30/02	2	NA	NA	NA	NA	21 J	NA	NA
616SB03[5.0]	07/30/02	5	NA	NA	NA	NA	29 J	NA	NA
617SB01[2.0]	08/01/02	2	NA	NA	NA	NA	90	NA	NA
617SB01[5.0]	08/01/02	5	NA	NA	NA	NA	74	NA	NA
617SB02[2.0]	07/31/02	2	NA	NA	NA	NA	140	NA	NA
617SB02[5.0]	07/31/02	5	NA	NA	NA	NA	28	NA	NA
617SB03[2.0]	08/01/02	2	NA	NA	NA	NA	110	NA	NA
617SB03[5.0]	08/01/02	5	NA	NA	NA	NA	140	NA	NA
617SB04[1.5]	01/15/03	1.5	NA	NA	NA	NA	8.8	NA	NA
617SB04[6.0]	01/15/03	6	NA	NA	NA	NA	34	NA	NA
617SB04[8.0]	01/15/03	8	NA	NA	NA	NA	11	NA	NA
617SB05[1.5]	01/15/03	1.5	NA	NA	NA	NA	47	NA	NA
617SB05[4.0]	01/15/03	4	NA	NA	NA	NA	3.1	NA	NA
617SB05[7.5]	01/15/03	7.5	NA	NA	NA	NA	10	NA	NA

Table C-5
Summary of Metals Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	**Sample Date**	**Sample Depth (feet)**	**Arsenic**	**Cadmium**	**Chromium**	**Copper**	**Lead**	**Nickel**	**Zinc**
		Analytical Method	SW6020	SW6020	SW6020	SW6020	SW6020	SW6020	SW6020
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Cleanup Level[1]			**5.9**	**1.7**	**120**	**43**	**300**	**71**	**66**
617SB06[2.5]	01/15/03	2.5	NA	NA	NA	NA	27	NA	NA
617SB06[6.0]	01/15/03	6	NA	NA	NA	NA	**340**	NA	NA
617SB06[10.0]	01/15/03	10	NA	NA	NA	NA	6.4	NA	NA
617SB07[1.5]	01/15/03	1.5	NA	NA	NA	NA	42	NA	NA
617SB07[5.5]	01/15/03	5.5	NA	NA	NA	NA	75	NA	NA
617SB07[9.0]	01/15/03	9	NA	NA	NA	NA	5.1	NA	NA
617SB08[2.0]	01/15/03	2	NA	NA	NA	NA	71	38	**110**
617SB08[5.5]	01/15/03	5.5	NA	NA	NA	NA	< 1.1	< 2.2	16
617SB08[10.0]	01/15/03	10	NA	NA	NA	NA	5.8	42	22
617SB09[2.0]	01/16/03	2	NA	NA	NA	NA	37 J-	NA	NA
617SB09[5.5]	01/16/03	5.5	NA	NA	NA	NA	18 J-	NA	NA
617SB09[10.0]	01/16/03	10	NA	NA	NA	NA	1.5 J-	NA	NA
619SB01[4.5]	07/31/02	4.5	NA	< 0.5	**130**	17	42	**220**	**68**
619SB01[6.0]	07/31/02	6	NA	< 0.5	48	4.7	6.6	25	< 2 U
619SB02[2]	08/06/02	2	NA	< 0.5	56 J	12 J	31 J	**75**	54
DUP080602D[MSD]	08/06/02	2.5	NA	< 0.5	33 J	13 J	25 J	56	37
619SB02[5]	08/06/02	5	NA	< 0.5	23 J	3 J	< 4	43	14
619SB03[4.5]	07/31/02	4.5	NA	< 0.5	**190**	17	28	**270**	62
619SB03[6.0]	07/31/02	6	NA	< 0.5	23	2.7	< 4	25	< 2 U
619SB04[7.0]	01/23/03	7	NA	NA	32	3.9	4.9	33	17
619SB04[11.5]	01/23/03	11.5	NA	NA	26	7.1	3.5	29	17
DUP012303A	01/23/03	12	NA	NA	26	5.8	2.9	29	16
619SB04[13.0][MSD]	01/23/03	13	NA	NA	41	10	12	37	28
619SB05[6.0]	01/23/03	6	NA	NA	20	NA	NA	22	NA
619SB05[9.0]	01/23/03	9	NA	NA	26	NA	NA	39	NA
619SB05[12.0]	01/23/03	12	NA	NA	51	NA	NA	56	NA

Table C-5
Summary of Metals Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	**Sample Date**	**Sample Depth (feet)**	**Arsenic**	**Cadmium**	**Chromium**	**Copper**	**Lead**	**Nickel**	**Zinc**
		Analytical Method	SW6020	SW6020	SW6020	SW6020	SW6020	SW6020	SW6020
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Cleanup Level[1]			**5.9**	**1.7**	**120**	**43**	**300**	**71**	**66**
625SB01[2]	07/29/02	2	NA	< 0.5	35 J	6.7 J	8.9 J	26 J	36
625SB01[4]	07/29/02	4	NA	< 0.5	27 J	3.4 J	< 4	29 J	13
625SB02[2]	07/29/02	2	NA	< 0.5	83 J	22 J	58 J	**130 J**	64
625SB03[2]	07/29/02	2	NA	< 0.5	24 J	29 J	4.9 J	25 J	62
DUP072902A	07/29/02	2.5	NA	< 0.5	41 J	8.1 J	13 J	34 J	34
625SB03[5]	07/29/02	5	NA	< 0.5	29 J	3.4 J	< 4	24 J	15
DUP072902B	07/29/02	5.5	NA	< 0.5	22 J	2.9 J	< 4	23 J	15
625SB04[2]	07/29/02	2	NA	0.8	16 J	**46 J**	62 J	29 J	**100**
625SB04[5]	07/29/02	5	NA	< 0.5	25 J	3.2 J	< 4	22 J	14
625SB05[2.0]	01/13/03	2	NA	NA	51 J-	NA	25	**150 J-**	NA
625SB05[7.5]	01/13/03	7.5	NA	NA	22 J-	NA	2.1	37 J-	NA
625SB05[10.0]	01/13/03	10	NA	NA	67 J-	NA	9.2	**79 J-**	NA
626SB01[2]	07/29/02	2	NA	< 0.5	34 J	22 J	55 J	62 J	**88**
626SB01[4]	07/29/02	4	NA	< 0.5	22 J	6 J	8.8 J	28 J	30
626SB02[2]	07/29/02	2	NA	< 0.5	53 J	16 J	14 J	42 J	35
626SB02[4]	07/29/02	4	NA	< 0.5	25 J	4.5 J	< 4	35 J	22
626SB03[2]	07/29/02	2	NA	< 0.5	36	3.3 J	< 4	29	14 J
626SB03[5]	07/29/02	5	NA	< 0.5	22	2.9 J	< 4	27	13 J
626SB04[6.5]	01/23/03	6.5	NA	NA	58	4.6	4	38 J-	16 J-
DUP012303C[MSD]	01/23/03	7	NA	NA	21	3.4	1.5	30 J-	18 J-
626SB04[9.0]	01/23/03	9	NA	NA	< 2.2	4.4	< 1.1	< 4.3 UJ	< 11 UJ
626SB04[11.0]	01/23/03	11	NA	NA	71	22	16	69 J-	61 J-
626SB05[7.0]	01/23/03	7	NA	NA	30	8.2	14	28	33
626SB05[8.5]	01/23/03	8.5	NA	NA	78	33	12	**89**	**80**
DUP012303E	01/23/03	9	NA	NA	**140**	**80**	93	**120**	**110**
626SB05[10.0]	01/23/03	10	NA	NA	54	11	4.9	64	32

Table C-5
Summary of Metals Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	Sample Date	Sample Depth (feet)	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc
		Analytical Method	SW6020	SW6020	SW6020	SW6020	SW6020	SW6020	SW6020
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Cleanup Level[1]			**5.9**	**1.7**	**120**	**43**	**300**	**71**	**66**
628SB01[2.0]	07/30/02	2	NA	< 0.5	41 J	31 J	9.7 J	**90 J+**	55 J
628SB01[5.0]	07/30/02	5	NA	< 0.5	31 J	3.3 J	< 4	33 J+	13 J
628SB02[2.5]	07/30/02	2.5	NA	< 0.5	20 J	3 J	< 4	29 J	13 J
628SB02[5.5]	07/30/02	5.5	NA	< 0.5	29 J	5.8 J	< 4	45 J+	19 J
DUP073002A	07/30/02	5	NA	< 0.5	30 J	6 J	4.3 J	39 J+	19 J
628SB03[2.0]	07/30/02	2	NA	< 0.5	50 J	41	71	**110 J**	**95**
628SB03[4.5]	07/30/02	4.5	NA	< 0.5	19 J	4.5 J	< 4	24 J	14 J
628SB04[2]	07/30/02	2	NA	< 0.5	27 J	3.7	< 4	30	15
628SB04[5]	07/30/02	5	NA	< 0.5	27 J	4.2	< 4	32	17
628SB05[2]	07/31/02	2	NA	< 0.5	39 J	6.9	37	37	36
628SB05[5]	07/31/02	5	NA	< 0.5	45 J	7.2	59	35	31
628SB06[2]	07/31/02	2	NA	< 0.5	33 J	8.9	< 4	30	33
628SB06[4]	07/31/02	4	NA	< 0.5	39 J	8	19	29	30
628SB07[2]	07/31/02	2	NA	< 0.5	45 J	11	47	60	**72**
628SB07[5]	07/31/02	5	NA	0.8	**260 J**	**45**	99	**140**	**100**
628SB08[2]	07/31/02	2	NA	< 0.5	74 J	21	51	46	55
628SB08[5]	07/31/02	5	NA	< 0.5	21 J	4.6	< 4	30	14
628SB09[2]	08/02/02	2	NA	< 0.5	**290**	24	5.4	**990**	55
DUP080202A	08/02/02	2.5	NA	< 0.5	18	2.9	< 4	23	13
628SB09[5]	08/02/02	5	NA	< 0.5	28	4	< 4	28	15
628SB10[2.0]	07/30/02	2	NA	< 0.5	24 J	5.1 J	< 4	29 J+	14 J
628SB10[5.0]	07/30/02	5	NA	< 0.5	23 J	3.7 J	< 4	27 J+	12 J
628SB11[2]	07/31/02	2	NA	< 0.5	61 J	18	46	53	60
DUP073102A(MSD)	07/31/02	2.5	NA	< 0.5	64 J	9.9	57	34	34
628SB11[5]	07/31/02	5	NA	< 0.5	34 J	8.5	59	29	29
628SB12[2.0]	01/17/03	2	NA	NA	42 J+	24	29 J-	69 J+	59 J-

Table C-5
Summary of Metals Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	**Sample Date**	**Sample Depth (feet)**	**Arsenic**	**Cadmium**	**Chromium**	**Copper**	**Lead**	**Nickel**	**Zinc**
		Analytical Method	SW6020	SW6020	SW6020	SW6020	SW6020	SW6020	SW6020
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Cleanup Level[1]			**5.9**	**1.7**	**120**	**43**	**300**	**71**	**66**
628SB12[5.5]	01/17/03	5.5	NA	NA	20 J+	24	< 1.3 UJ	23 J+	57 J-
DUP011703B[MSD]	01/17/03	6	NA	NA	22 J+	28	1.7 J-	28 J+	**74 J-**
628SB12[10.0]	01/17/03	10	NA	NA	30 J+	12	2 J-	19 J+	34 J-
628SB13[2.0]	01/17/03	2	NA	NA	31 J+	9.9	3.3 J-	29 J+	24 J-
628SB13[6.0]	01/17/03	6	NA	NA	36 J+	19	2.2 J-	41 J+	22 J-
628SB13[10.0]	01/17/03	10	NA	NA	32 J+	9.6	4.5 J-	37 J+	33 J-
628SB14[3.0]	01/17/03	3	NA	NA	33	3.7	1.3	29	15 J-
628SB14[6.0]	01/17/03	6	NA	NA	41	17	8.4	39	**93 J-**
628SB14[10.0]	01/17/03	10	NA	NA	29	3.9	1.5	25	16 J-
628SB15[2.0]	01/17/03	2	NA	NA	**140**	24	2.6	**420**	37 J-
628SB15[6.0]	01/17/03	6	NA	NA	27	3.3	1.5	16	15 J-
628SB15[9.5]	01/17/03	9.5	NA	NA	33	3	1.5	17	18 J-
DUP011703A	01/17/03	10	NA	NA	28	3.8	1.2	31	15 J-
628SB16[14.0]	01/23/03	4	NA	NA	37	3.9	1.7	22	14
628SB16[6.0]	01/23/03	6	NA	NA	26	4.7	2.8	29	17
628SB16[8.5]	01/23/03	8.5	NA	NA	39	9.8	11	40	29
DUP012303D	01/23/03	9	NA	NA	29	7.8	7.1	35	22
628SB17[2.0]	01/17/03	2	NA	NA	29	37	20	46	**83 J-**
628SB17[7.0]	01/17/03	7	NA	NA	25	4.3	2.7	28	17 J-
628SB17[10.0]	01/17/03	10	NA	NA	26	4.2	1.8	28	14 J-
T615SB01[2.0]	08/01/02	2	NA	0.9	55	30	170	63	**460**
T615SB01[4.5]	08/01/02	4.5	NA	< 0.5	92	30	99	**230**	**71**
T615SB02[2.0]	07/31/02	2	NA	< 0.5	26	7	150	22	**100**
T615SB02[5.0]	07/31/02	5	NA	< 0.5	60	4.9	5.3	21	< 2 U
T615SB03[2.0]	01/15/03	2	NA	NA	NA	NA	82	**150 J-**	**97 J-**
T615SB03[6.0]	01/15/03	6	NA	NA	NA	NA	17	41 J-	41 J-

Table C-5
Summary of Metals Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	**Sample Date**	**Sample Depth (feet)**	**Arsenic**	**Cadmium**	**Chromium**	**Copper**	**Lead**	**Nickel**	**Zinc**
		Analytical Method	SW6020	SW6020	SW6020	SW6020	SW6020	SW6020	SW6020
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Cleanup Level[1]			**5.9**	**1.7**	**120**	**43**	**300**	**71**	**66**
T615SB03[10.0]	01/15/03	10	NA	NA	NA	NA	1.8	21 J-	26 J-
T618SB02[2.0]	08/06/02	2	NA	< 0.5	40 J	< 2 U	14	40	< 2 U
DUP080602C	08/06/02	2.5	NA	< 0.5	36 J	11	15	42	< 2 U
T618SB02[5.0]	08/06/02	5	NA	< 0.5	38 J	16	19	40	< 2 U
S15SB01[2.0]	08/06/02	2	NA	NA	NA	NA	34	NA	NA
S15SB01[5.0]	08/06/02	5	NA	NA	NA	NA	27	NA	NA
S15SB02[2.0]	08/01/02	2	NA	NA	NA	NA	11	NA	NA
S15SB02[4.0]	08/01/02	4	NA	NA	NA	NA	8.9	NA	NA
S15SB03[2.0]	08/06/02	2	NA	NA	NA	NA	25	NA	NA
S15SB03[5.0]	08/06/02	5	NA	NA	NA	NA	< 4	NA	NA
S15SB04[2.0]	01/14/03	2	NA	NA	86	NA	36	**100 J-**	NA
S15SB04[5.5]	01/14/03	5.5	NA	NA	19	NA	14	33 J-	NA
S15SB04[10.0]	01/14/03	10	NA	NA	26	NA	1.4	25 J-	NA
S15SB05[1.5]	01/15/03	1.5	NA	NA	40 J-	NA	27 J-	36 J-	NA
S15SB05[5.5]	01/15/03	5.5	NA	NA	22 J-	NA	11 J-	21 J-	NA
DUP011503A	01/15/03	6	NA	NA	25 J-	NA	1.8 J-	20 J-	NA
S15SB05[7.0]	01/15/03	7	NA	NA	72 J-	NA	10 J-	66 J-	NA
DUP011503B	01/15/03	7.5	NA	NA	77 J-	NA	11 J-	64 J-	NA
S15SB06[3.0]	01/16/03	3	NA	NA	14 J-	NA	10 J-	16 J-	NA
S15SB06[6.0]	01/16/03	6	NA	NA	34 J-	NA	140 J-	47 J-	NA
S15SB06[10.0]	01/16/03	10	NA	NA	36 J-	NA	3.8 J-	42 J-	NA
S15SB07[1.5]	01/15/03	1.5	NA	NA	42 J-	NA	28 J-	62 J-	NA
S15SB07[5.0]	01/15/03	5	NA	NA	**160 J-**	NA	66 J-	**180 J-**	NA
S15SB07[8.0]	01/15/03	8	NA	NA	58 J-	NA	6.9 J-	60 J-	NA
600ASB07[2.0]	01/17/03	2	NA	NA	NA	NA	270 J-	NA	**140 J-**
600ASB07[5.5]	01/17/03	5.5	NA	NA	NA	NA	1.8 J-	NA	23 J-

Table C-5
Summary of Metals Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	**Sample Date**	**Sample Depth (feet)**	**Arsenic**	**Cadmium**	**Chromium**	**Copper**	**Lead**	**Nickel**	**Zinc**
		Analytical Method	SW6020	SW6020	SW6020	SW6020	SW6020	SW6020	SW6020
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Cleanup Level[1]			**5.9**	**1.7**	**120**	**43**	**300**	**71**	**66**
600ASB07[10.0]	01/17/03	10	NA	NA	NA	NA	1.6 J-	NA	15 J-
600ASB08[2.0]	01/17/03	2	NA	NA	NA	NA	180	NA	**110 J-**
600ASB08[5.5]	01/17/03	5.5	NA	NA	NA	NA	26	NA	**68 J-**
DUP011703C	01/17/03	6	NA	NA	NA	NA	10	NA	31 J-
600ASB08[7.0]	01/17/03	7	NA	NA	NA	NA	6.5	NA	60 J-
600ASB09[2.0]	01/16/03	2	NA	NA	NA	NA	71	NA	**90 J-**
600ASB09[7.0]	01/16/03	7	NA	NA	NA	NA	23	NA	35 J-
DUP011603C	01/16/03	7.5	NA	NA	NA	NA	10	NA	**110 J-**
600ASB09[10.0][MSD]	01/16/03	10	NA	NA	NA	NA	12	NA	30 J-
600FDSSB02[2.0]	01/15/03	2	NA	NA	NA	NA	8.1	NA	NA
600FDSSB02[5.5]	01/15/03	5.5	NA	NA	NA	NA	40	NA	NA
600FDSSB02[10.0]	01/15/03	10	NA	NA	NA	NA	23	NA	NA
600CSB01[2]	07/31/02	2	NA	NA	NA	NA	< 4	NA	NA
600CSB01[5]	07/31/02	5	NA	NA	NA	NA	< 4	NA	NA
600CSB02[2]	07/31/02	2	NA	NA	NA	NA	9.9	NA	NA
600CSB02[4.0]	07/31/02	4	NA	NA	NA	NA	6.2	NA	NA
600CSB03[2.0]	07/29/02	2	NA	NA	NA	NA	< 4	NA	NA
600CSB03[5.0]	07/29/02	5	NA	NA	NA	NA	< 4	NA	NA
600CSB04[2.0]	07/29/02	2	NA	NA	NA	NA	< 4	NA	NA
600CSB04[5.0]	07/29/02	5	NA	NA	NA	NA	97 J	NA	NA
600CSB05[2.0]	01/13/03	2	NA	NA	NA	NA	< 1.6	**1,400**	NA
600CSB05[8.0]	01/13/03	8	NA	NA	NA	NA	1.9	30	NA
600CSB05[10.0]	01/13/03	10	NA	NA	NA	NA	2.5	25	NA
600CSB06[2.0]	01/13/03	2	NA	NA	NA	NA	73	59	NA
600CSB06[5.0]	01/13/03	5	NA	NA	NA	NA	3.5	24	NA
600CSB06[10.0]	01/13/03	10	NA	NA	NA	NA	16	47	NA

Table C-5
Summary of Metals Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	**Sample Date**	**Sample Depth (feet)**	**Arsenic**	**Cadmium**	**Chromium**	**Copper**	**Lead**	**Nickel**	**Zinc**
		Analytical Method	SW6020	SW6020	SW6020	SW6020	SW6020	SW6020	SW6020
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Cleanup Level[1]			**5.9**	**1.7**	**120**	**43**	**300**	**71**	**66**
600CSB07[2.0]	01/13/03	2	NA	NA	NA	NA	6.5	**790**	NA
600CSB07[5.5]	01/13/03	5.5	NA	NA	NA	NA	2	29	NA
600CSB07[10.0]	01/13/03	10	NA	NA	NA	NA	2.4	26	NA
600RRSB01[2.0]	08/05/02	2	2.9	< 0.5	**160 J**	38	52	**160 J**	**95**
DUP080502B	08/05/02	2.5	5.1	< 0.5	35 J	24	110	41 J	**170**
600RRSB01[5.5]	08/05/02	5.5	3.9	< 0.5	91 J	13	5.8	42 J	34
600RRSB02[2.0]	08/05/02	2	NA	0.7	13 J	26	36	24 J	**86**
600RRSB02[5.0]	08/05/02	5	NA	< 0.5	41 J	37	48	57 J	**100**
600RRSB03[2.0]	08/05/02	2	2.4	< 0.5	76 J	34	9.8	**130 J**	29
600RRSB03[5.0]	08/05/02	5	1.2	< 0.5	24 J	23	16	39 J	47
600RRSB04[2]MSD	08/07/02	2	2.9	< 0.5	38 J	24 J	37	**82**	**84 J**
600RRSB04[4]MSD	08/07/02	4	2.8	0.7	38 J	20 J	97	60	**160 J**
600RRSB05[2.0]	01/16/03	2	NA	NA	**370**	NA	< 1.2	**1,800**	NA
600RRSB05[6.0]	01/16/03	6	NA	NA	30	NA	2.8	29	NA
600RRSB05[10.0]	01/16/03	10	NA	NA	32	NA	8.5	33	NA
600RRSB06[2.0]	01/21/03	2	NA	NA	51	NA	57	52	54
600RRSB06[5.5]	01/21/03	5.5	NA	NA	50	NA	13	52 J-	**70**
DUP012103D	01/21/03	6	NA	NA	20	NA	2.2	26 J-	16
600RRSB06[10.0]	01/21/03	10	NA	NA	22	NA	1.1	31 J-	15
600RRSB07[2.0]	01/22/03	2	NA	NA	65	NA	59	**110 J-**	**67**
600RRSB07[7.0]	01/22/03	7	NA	NA	24	NA	1.4	28	18
600RRSB07[9.5]	01/22/03	9.5	NA	NA	59	NA	40	69	**73**
600RRSB08[2.0]	01/21/03	2	NA	NA	47 J+	NA	20 J-	61 J-	56 J-
600RRSB08[5.5]	01/21/03	5.5	NA	NA	18 J+	NA	1.6 J-	28 J-	15 J-
DUP012103B	01/21/03	6	NA	NA	27 J+	NA	1.3 J-	39 J-	12 J-
600RRSB08[10.0]	01/21/03	10	NA	NA	100 J+	NA	27 J-	**110 J-**	**110 J-**
600RRSB09[2.0]	01/22/03	2	NA	NA	12	NA	49	22	41

Table C-5
Summary of Metals Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	**Sample Date**	**Sample Depth (feet)**	**Arsenic**	**Cadmium**	**Chromium**	**Copper**	**Lead**	**Nickel**	**Zinc**
		Analytical Method	SW6020	SW6020	SW6020	SW6020	SW6020	SW6020	SW6020
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Cleanup Level[1]			**5.9**	**1.7**	**120**	**43**	**300**	**71**	**66**
600RRSB09[7.5][MSD]	01/22/03	7.5	NA	NA	20	NA	1.3	27 J-	16
600RRSB09[9.5]	01/22/03	9.5	NA	NA	78	NA	18	**81**	**82**
600SDSB01[2.0]	08/06/02	2	NA	< 0.5	26 J	21	7.9	55	53
600SDSB01[5.0]	08/06/02	5	NA	< 0.5	18 J	< 2 U	< 4	21	< 2 U
600SDSB02[2.0]	08/01/02	2	NA	< 0.5	25 J	23	68	45	**110**
600SDSB02[5.0]	08/01/02	5	NA	< 0.5	38 J	13	17	51	36
600SDSB03[2.0]	08/06/02	2	NA	< 0.5	27 J	4.7	17 J	23 J	29
600SDSB03[5.5]	08/06/02	5.5	NA	< 0.5	38 J	7.5	12 J	27 J	43
600SDSB04[2.0]	08/06/02	2	NA	< 0.5	42 J	8.7	5.5 J	34 J	23
DUP080602B	08/06/02	2.5	NA	< 0.5	42 J	9.2	6 J	32 J	23
600SDSB04[5.0]	08/06/02	5	NA	< 0.5	34 J	3.2	< 4	21 J	17
600SDSB05[2]	08/07/02	2	NA	< 0.5	41 J	4.7 J	< 4	20	17 J
600SDSB05[5]	08/07/02	5	NA	< 0.5	36 J	4.2 J	< 4	18	17 J
LTTDSB01[2.5]	07/29/02	2.5	NA	< 0.5	49 J	23	140	69	47 J
LTTDSB01[5.0]	07/29/02	5	NA	< 0.5	58 J	37	**560**	**89**	**94 J**
LTTDSB02[2.0]	07/29/02	2	NA	< 0.5	39 J	**57**	69	62	**110 J**
LTTDSB02[5.0]	07/29/02	5	NA	< 0.5	26 J	3.4	< 4	30	< 2 U
LTTDSB03[2.0]	07/29/02	2	NA	< 0.5	**160 J**	14	26	**240**	49 J
LTTDSB03[5.0]	07/29/02	5	NA	< 0.5	38 J	6.7	7.5	37	18 J
LTTDSB04[2.0]	07/29/02	2	NA	< 0.5	31 J	**45**	110	54	**130 J**
LTTDSB04[5.0]	07/29/02	5	NA	< 0.5	35 J	2.7	< 4	32	< 2 U
LTTDSB05[2.0]	07/29/02	2	NA	**2.8**	**160 J**	24	40	**270**	**130 J**
LTTDSB05[5.0]	07/29/02	5	NA	< 0.5	23 J	3.2	< 4	31	< 2 U
LTTDSB06[2.0]	07/29/02	2	NA	< 0.5	33 J	5.1	< 4	60	17 J

Table C-5
Summary of Metals Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	Sample Date	Sample Depth (feet)	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc
		Analytical Method	SW6020	SW6020	SW6020	SW6020	SW6020	SW6020	SW6020
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Cleanup Level[1]			**5.9**	**1.7**	**120**	**43**	**300**	**71**	**66**
LTTDSB06[4.5]	07/29/02	4.5	NA	< 0.5	48 J	3.4	< 4	71	15 J
LTTDSB07[2.0]	01/13/03	2	NA	NA	61	34 J-	**400**	60	45
LTTDSB07[7.5]	01/13/03	7.5	NA	NA	48 J-	15 J-	8.1 J-	35 J-	**76 J-**
LTTDSB07[10.0]	01/13/03	10	NA	NA	31 J-	7.1 J-	9.2 J-	34 J-	24 J-
LTTDSB08[3.0]	01/13/03	3	NA	NA	7.3	43 J-	32	10	< 3.3 U
LTTDSB08[5.5]	01/13/03	5.5	NA	NA	45	4.4 J-	2.8	23	< 4.3 U
DUP011303B	01/13/03	6	NA	NA	44	4.9 J-	4.4	30	< 3.9 U
LTTDSB08[10.0]	01/13/03	10	NA	NA	27	7.4 J-	7.6	24	27
LTTDSB09[2.5]	01/13/03	2.5	NA	NA	42 J-	**96 J-**	78 J-	21 J-	**140 J-**
LTTDSB09[5.5]	01/13/03	5.5	NA	NA	13 J-	3.5 J-	7.7 J-	14 J-	**140 J-**
LTTDSB09[10.0]	01/13/03	10	NA	NA	16 J-	1.9 J-	0.98 J-	17 J-	64 J-
LTTDSB10[2.5]	01/13/03	2.5	NA	NA	**1,000**	**62 J-**	< 1.6	**1,700**	< 4.3 U
DUP011303A	01/13/03	3	NA	NA	21	30 J-	2.5	26	< 3.9 U
LTTDSB10[5.5]	01/13/03	5.5	NA	NA	42	5 J-	2.2	35	< 4.5 U
LTTDSB10[10.0]	01/13/03	10	NA	NA	25	4.3 J-	2.3	22	< 4.4 U
600SB101[2]	08/06/02	2	3.9	< 0.5	34 J	22 J	84 J	47	**130**
DUP080602A	08/06/02	2.5	2.5	< 0.5	27 J	7.6 J	7.2 J	67	24
600SB101[4]	08/06/02	4	4.1	< 0.5	**150 J**	5.5 J	< 4	**120**	16
600SB102[2]	08/06/02	2	NA	0.6	14 J	19 J	96 J	18	**78**
600SB102[4]	08/06/02	4	1.6	< 0.5	27 J	3.6 J	< 4	22	14
600SB103[2]	08/05/02	2	1.9	< 0.5	29	8.2 J	7.6 J	34	25
600SB103[4]	08/05/02	4	4.7	< 0.5	33	5.6 J	4.2 J	39	21
DUP080502D	08/05/02	4.5	3.3	< 0.5	26	4 J	< 4	30	16
600SB104[2]	08/06/02	2	2.3	< 0.5	27 J	5.4 J	< 4	34	20
600SB104[4]	08/06/02	4	3	< 0.5	36 J	4.8 J	4.3 J	43	17
600SB105[2]	08/05/02	2	NA	< 0.5	61	8.8 J	5.9 J	53	30

Table C-5
Summary of Metals Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	Sample Date	Sample Depth (feet)	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc
		Analytical Method	SW6020	SW6020	SW6020	SW6020	SW6020	SW6020	SW6020
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Cleanup Level[1]			**5.9**	**1.7**	**120**	**43**	**300**	**71**	**66**
600SB105[4]	08/05/02	4	NA	< 0.5	61	15 J	**350 J**	41	50
DUP080502A	08/05/02	4.5	NA	< 0.5	61	22 J	**330 J**	42	**70**
600SB106[2]	08/05/02	2	NA	0.8	95	39 J	**510 J**	**78**	**210**
600SB106[4]	08/05/02	4	NA	< 0.5	46	13 J	66 J	36	**68**
600SB107[2]	08/02/02	2	NA	< 0.5	69	22	170	63	**110**
600SB107[4]	08/02/02	4	NA	0.6	74	25	270	**72**	**150**
600SB108[2]	08/02/02	2	NA	< 0.5	46	8.8	15	36	34
600SB108[4]	08/02/02	4	NA	< 0.5	50	5.7	4.9	25	20
600SB109[2]	08/05/02	2	NA	< 0.5	**930**	19 J	6.2 J	**1,300**	35
600SB109[4]	08/05/02	4	NA	< 0.5	44	5.1 J	4.7 J	26	18

Notes

[1] Cleanup Levels are found in Table 3.
BOLD values indicate concentration exceeding cleanup levels.
DUP prefix indicates blind duplicate sample; parent sample precedes duplicate sample.
LD - laboratory duplicate
mg/kg - milligrams per kilogram
MSD - Matrix spike duplicate
MSD indicates to the laboratory which samples were to be used for the MSD quality control sample analyses. These are not matrix spike results.
NA - Not analyzed
J+ - Data validation qualifier, "The analyte was positively identified; the associated numerical value is biased high due to a high surrogate recovery and should be
J- - Data validation qualifier, "The analyte was positively identified; the associated numerical values is biased low due to a low surrogate recovery and should be considered an approximate concentration of the analyte in the sample."
UJ - Data validation qualifier, "The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample."

Table C-6
Summary of Pesticide Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	Sample Date	Sample Depth (feet)	4,4'-DDD	4,4'-DDE	4,4'-DDT	Aldrin	alpha-BHC	beta-BHC	delta-BHC	alpha-Chlordane	Dieldrin	Endosulfan I
		Analytical Method	SW8081	SW8081	SW8081	SW8081	SW8081	SW8081	SW8081	SW8081	SW8081	SW8081
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Screening Level[1]			**0.53**	**0.61**	**0.53**	**0.07**	**0.44**	**0.79**	**0.44**	**0.04**	**0.074**	**3.3**
T609SB01[2]	07/30/02	2	< 0.008	< 0.008	< 0.008 UJ	< 0.004	< 0.004 UJ	< 0.004	< 0.004	0.006	< 0.008	< 0.004
T609SB02[2]	07/30/02	2	< 0.008	< 0.008	< 0.008 UJ	< 0.004	< 0.004 UJ	< 0.004	< 0.004	< 0.004	< 0.008	< 0.004
DUP073002B	07/30/02	1.5	< 0.008	< 0.008	< 0.008 UJ	< 0.004	< 0.004 UJ	< 0.004	< 0.004	< 0.004	< 0.008	< 0.004
T609SB03[2]	07/30/02	2	< 0.008	< 0.008	< 0.008 UJ	< 0.004	< 0.004 UJ	< 0.004	< 0.004	< 0.004	< 0.008	< 0.004
T609SB04[2]	07/30/02	2	< 0.16	< 0.16	< 0.16 UJ	**< 0.08**	< 0.08 UJ	< 0.08	< 0.08	**< 0.08**	**< 0.16**	< 0.08
T609SB05[2]	07/30/02	2	< 0.008	< 0.008	< 0.008 UJ	< 0.004	< 0.004 UJ	< 0.004	< 0.004	< 0.004	< 0.008	< 0.004
T609SB06[2]	07/30/02	2	< 0.008	< 0.008	< 0.008 UJ	< 0.004	< 0.004 UJ	< 0.004	< 0.004	< 0.004	< 0.008	< 0.004

Notes
[1] Screening Levels were obtained from Table 1a of the *Draft Site Investigation Report Commissary/Post Exchange Study Area Presidio of San Francisco, California* (Treadwell
Bold indicates a reporting limit which exceeds the screening level.
DUP prefix indicates blind duplicate sample; parent sample precedes duplicate sample.
feet - feet below ground surface
mg/kg - milligrams per kilograms
UJ - Data validation qualifier, "The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or m
and precisely measure the analyte in the sample."

Table C-6
Summary of Pesticide Results in Soil
Commissary/PX Study Area
Presidio of San Francisco, California

Endosulfan II	**Endosulfan Sulfate**	**Endrin**	**Endrin Aldehyde**	**Endrin Ketone**	**gamma-BHC**	**gamma-Chlordane**	**Heptachlor**	**Heptachlor Epoxide**
SW8081	SW8081	SW8081	SW8081	SW8081	SW8081	SW8081	SW8081	SW8081
(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
3.3	**3.3**	**0.11**	**0.11**	**0.11**	**0.37**	**0.04**	**0.29**	**0.21**
< 0.004	< 0.008	< 0.008	< 0.008	< 0.008	< 0.004	0.006	< 0.004 UJ	< 0.004
< 0.004	< 0.008	< 0.008	< 0.008	< 0.008	< 0.004	< 0.004	< 0.004 UJ	< 0.004
< 0.004	< 0.008	< 0.008	< 0.008	< 0.008	< 0.004	< 0.004	< 0.004 UJ	< 0.004
< 0.004	< 0.008	< 0.008	< 0.008	< 0.008	< 0.004	< 0.004	< 0.004 UJ	< 0.004
< 0.08	< 0.16	**< 0.16**	**< 0.16**	**< 0.16**	< 0.08	**< 0.08**	< 0.08 UJ	< 0.08
< 0.004	< 0.008	< 0.008	< 0.008	< 0.008	< 0.004	< 0.004	< 0.004 UJ	< 0.004
< 0.004	< 0.008	< 0.008	< 0.008	< 0.008	< 0.004	< 0.004	< 0.004 UJ	< 0.004

l& Rollo, 2003c).

ıay not represent the actual limit of quantitation necessary to accurately

Table C-7
TPH Results in Groundwater
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	Sample Date	TPH as Gasoline (Carbon Range C_7-C_{12})	TPH as Diesel (Carbon Range C_{12}-C_{24})	TPH as Fuel Oil [2] (Carbon Range C_{24}-C_{36})
	Analytical Method [1]	SW8015B/ SW8015M	SW8015B/ SW8015M	SW8015B/ SW8015M
		(µg/L)	(µg/L)	(µg/L)
Cleanup Levels [3]		**770**	**880**	**1,200**
601GG01	08/06/02	< 50 UJ	NA	NA
601GG02	08/05/02	< 50 UJ	NA	NA
DUP080502C	08/05/02	< 50 UJ	NA	NA
603GG01	08/05/02	< 50 UJ	< 100 UJ	NA
610GG01	08/05/02	< 50 UJ	< 100 UJ	< 300 UJ
613GG02	08/02/02	< 50 UJ	< 100 UJ	< 300 UJ
613GG03	08/02/02	< 50 UJ	< 100 UJ	< 300 UJ
613GG07	07/30/02	< 50 UJ	< 100 UJ	< 300
613GG11	01/21/03	NA	< 50	350
613GG12	01/21/03	NA	< 50	270
616GG02	07/30/02	< 50 UJ	NA	NA
617GG01	08/01/02	NA	< 100 UJ	< 300 UJ
617GG03	08/01/02	NA	< 100 UJ	< 300 UJ
619GG01	07/31/02	< 50 UJ	< 100 UJ	310 J-
619GG04[MSD]	01/23/03	< 50	84	< 250
DUP012303B	01/23/03	< 50	< 50	< 250
619GG05	01/23/03	NA	< 50	< 250
625GG03	07/29/02	< 50 UJ	< 100 UJ	< 300
DUP072902C	07/29/02	< 50 UJ	< 100 UJ	< 300
626GG01	07/29/02	< 50 UJ	< 100 UJ	< 300 UJ
628GG02	07/30/02	< 50 UJ	< 100 UJ	< 300
628GG04	07/30/02	< 50 UJ	< 100 UJ	< 300 UJ
628GG09	08/02/02	< 50 UJ	< 100 UJ	< 300
DUP080202B	08/02/02	< 50 UJ	< 100 UJ	< 300
628GG10	07/30/02	< 50 UJ	< 100 UJ	< 300
DUP073002C	07/30/02	< 50 UJ	< 100 UJ	< 300
T615GG01	08/01/02	< 50 UJ	< 100 UJ	< 300 UJ
T618GG02	08/06/02	< 50 UJ	< 100 UJ	< 300 UJ
S15GG01	08/06/02	< 50 UJ	< 100 UJ	< 300 UJ
600AGG01	08/07/02	NA	< 100 UJ	< 300 UJ
600AGG02	08/01/02	NA	< 100 UJ	< 300
600AGG03	08/01/02	NA	< 100 UJ	< 300
600AGG04	08/01/02	NA	< 100 UJ	< 300 UJ
600AGG05	08/01/02	NA	< 100 UJ	< 300 UJ
600AGG06	08/01/02	NA	< 100 UJ	< 300 UJ
600FDSGG01	08/01/02	< 50 UJ	< 100 UJ	< 300 UJ
DUP080102A	08/01/02	< 50 UJ	< 100 UJ	< 300 UJ
600CGG01	07/31/02	< 50 UJ	< 100 UJ	NA
600CGG02	07/31/02	< 50 UJ	< 100 UJ	NA
600CGG03	07/29/02	< 50 UJ	< 100 UJ	NA
600CGG04	07/29/02	< 50 UJ	< 100 UJ	NA
600SDGG01	08/06/02	< 50 UJ	< 100 UJ	< 300 UJ
600SDGG02	08/01/02	< 50 UJ	< 100 UJ	< 300 UJ
600SDGG03	08/06/02	< 50 UJ	< 100 UJ	< 300 UJ
600SDGG04	08/06/02	< 50 UJ	< 100 UJ	< 300 UJ
600SDGG05	08/07/02	< 50 UJ	< 100 UJ	< 300 UJ
600RRGG02	08/05/02	< 50 UJ	< 100 UJ	< 300 UJ
600RRGG04	08/07/02	< 50 UJ	< 100 UJ	< 300 UJ
600RRGG06	01/21/03	< 50	< 50	< 250
600RRGG07	01/22/03	< 50	< 50	< 250
LTTDGG02	07/29/02	< 50 UJ	< 100 UJ	< 300
DUP072902D	07/29/02	< 50 UJ	< 100 UJ	< 300
LTTDGG04	07/29/02	< 50 UJ	< 100 UJ	< 300
LTTDGG05	07/29/02	< 50 UJ	< 100 UJ	< 300 UJ

Table C-7
TPH Results in Groundwater
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	**Sample Date**	**TPH as Gasoline (Carbon Range C_7-C_{12})**	**TPH as Diesel (Carbon Range C_{12}-C_{24})**	**TPH as Fuel Oil [2] (Carbon Range C_{24}-C_{36})**
	Analytical Method [1]	SW8015B/ SW8015M	SW8015B/ SW8015M	SW8015B/ SW8015M
		(µg/L)	(µg/L)	(µg/L)
Cleanup Levels [3]		**770**	**880**	**1,200**
600GW101	12/02/03	340 Y	< 50	< 300
	08/13/03	370 Y	< 50	< 300
	06/09/03	470 Y	< 50	< 300
	03/11/03	630 Y	< 50	< 300
	12/04/02	310 Y	< 50	< 300
	09/10/02	230 J-	< 100 UJ	< 300 UJ
600GW102	12/02/03	< 50	< 50	< 300
	08/13/03	< 50	< 50	< 300
	06/09/03	< 50	< 50	< 300
	03/11/03	< 50	< 50	< 300
	12/04/02	< 50	< 50	< 300
	09/10/02	< 50 UJ	< 100 UJ	< 300 UJ
600GW103	12/02/03	< 50	< 50	< 300
	08/13/03	< 50	< 50	< 300
DUP0813033A	08/13/03	< 50	< 50	< 300
	06/09/03	< 50	< 50	< 300
	03/11/03	< 50	< 50	< 300
	12/04/02	< 50	< 50	< 300
	09/10/02	< 50 UJ	< 100 UJ	< 300 UJ
600GW104	12/02/03	< 50	< 50	< 300
DUP1202033A	12/02/03	< 50	< 50	< 300
	08/18/03	< 50	< 50	< 300
	06/05/03	< 50	< 50	< 300
	03/11/03	< 50	< 50	< 300
DUP0311032A	03/11/03	< 50	< 50	< 300
600GW104CL	03/11/03	< 50 UJ	< 50	< 250
	12/04/02	< 50	< 50	< 300
	09/10/02	< 50 UJ	< 100 UJ	< 300 UJ
DUP0910021A	09/10/02	< 50 UJ	< 100 UJ	< 300 UJ
600GW105	12/02/03	< 50	< 50	< 300
	08/13/03	< 50	< 50	< 300
	06/05/03	< 50	< 50	< 300
DUP0605033A	06/05/03	< 50	< 50	< 300
	03/12/03	< 50	< 50	< 300
	12/04/02	< 50	< 50	< 300
	09/11/02	< 50 UJ	< 100 UJ	< 300 UJ
600GW106	12/02/03	< 50	< 50	< 300
	08/13/03	< 50	< 50	< 300
	06/05/03	< 50	< 50	< 300
	03/12/03	< 50	< 50	< 300
	12/04/02	< 50	< 50	< 300
	09/11/02	< 50 UJ	< 100 UJ	< 300 UJ
600GW107	12/03/03	< 50	< 50	< 300
	08/13/03	< 50	170 HY	< 300
	06/06/03	< 50	< 50	< 300
	03/11/03	< 50	85 YH	< 300
	12/04/02	< 50	< 50	< 300
	09/11/02	< 50 UJ	NA	NA
600GW108	12/03/03	< 50	< 50	< 300
	08/13/03	< 50	< 50	< 300
	06/05/03	< 50	< 50	< 300
	03/12/03	< 50	< 50	< 300
	12/09/02	< 50	< 50	< 300
DUP1209022C	12/09/02	< 50	< 50	< 300
600GW108CL	12/09/02	< 50	< 50	< 250
	09/10/02	< 50 UJ	< 100 UJ	< 300 UJ

Table C-7
TPH Results in Groundwater
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	Sample Date	TPH as Gasoline (Carbon Range C_7-C_{12})	TPH as Diesel (Carbon Range C_{12}-C_{24})	TPH as Fuel Oil [2] (Carbon Range C_{24}-C_{36})
	Analytical Method [1]	SW8015B/ SW8015M	SW8015B/ SW8015M	SW8015B/ SW8015M
		(µg/L)	(µg/L)	(µg/L)
Cleanup Levels [3]		**770**	**880**	**1,200**
600GW109	12/03/03	< 50	< 50	< 300
	08/13/03	< 50	< 50	< 300
	06/05/03	< 50	< 50	< 300
	03/11/03	< 50	< 50	< 300
	12/04/02	< 50	< 50	< 300
	09/10/02	< 50 UJ	< 100 UJ	< 300 UJ
610GW101	12/02/03	< 50	< 50	< 300
	08/14/03	< 50	< 50	450
DUP0814033A	08/14/03	< 50	< 50	< 300
610GW101CL	08/14/03	< 48	< 50	< 240
	06/04/03	< 50	< 50	< 300
DUP0604033B	06/04/03	< 50	< 50	< 300
610GW101CL	06/04/03	< 50	< 50	< 250
	03/11/03	< 50	380 YH	**1,400**
	12/03/02	< 50	< 50	< 300
	08/29/02	< 50	< 50	< 300
	05/29/02	< 50	< 50	< 300
	03/05/02	< 50	< 50	< 300
	12/03/01	< 50	< 50	< 300
	08/29/01	< 50	NA	NA
610GW102	12/02/03	83	< 50	< 300
	08/18/03	73 Y	< 50	< 300
	06/05/03	67	< 50	< 300
	03/11/03	< 50	< 50	< 300
DUP0311033A	03/11/03	< 50	< 50	< 300
	12/03/02	55 Y	< 50	< 300
	08/29/02	67	< 50	< 300
	05/29/02	< 50	< 50	< 300
	03/05/02	72	< 50	< 300
	12/03/01	< 50	< 50	< 300
	08/29/01	230	NA	NA
610GW103	12/03/03	64	< 50	< 300
DUP1203033A	12/03/03	60	< 50	< 300
610GW103CL	12/03/03	< 50	< 48 A-01,U	< 240
	08/18/03	110 Y	< 50	< 300
DUP0818033A	08/18/03	110 Y	62 Y	< 300
	06/05/03	96	< 50	< 300
	03/11/03	< 50	< 50	< 300
	12/03/02	< 50	< 50	< 300
DUP1203022A	12/03/02	54 Y	< 50	< 300
	08/29/02	59	< 50	< 300
	05/30/02	88	< 50	< 300
DUP0530022A	05/30/02	88	< 50	< 300
610GW103CL	05/30/02	110 g	< 50	< 300
	03/05/02	100	< 50	< 300
DUP0305023A	03/05/02	110	< 50	< 300
610GW103CL	03/05/02	95 g	< 50 UJ	< 300
	12/03/01	< 50	< 50	< 300
DUP1203011A	12/03/01	< 50	< 50	< 300
610GW103CL	12/03/01	< 50	< 50	< 500
	08/29/01	430	NA	NA

Table C-7
TPH Results in Groundwater
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	Sample Date	TPH as Gasoline (Carbon Range C_7-C_{12})	TPH as Diesel (Carbon Range C_{12}-C_{24})	TPH as Fuel Oil [2] (Carbon Range C_{24}-C_{36})
	Analytical Method [1]	SW8015B/ SW8015M	SW8015B/ SW8015M	SW8015B/ SW8015M
		(µg/L)	(µg/L)	(µg/L)
Cleanup Levels [3]		**770**	**880**	**1,200**
610SP01	12/09/03	100 Y	< 50	< 300
DUP1209031A	12/09/03	100 Y	< 50	< 300
610SP01CL	12/09/03	58	< 48	< 240
	08/21/03	< 50	< 50	< 300
	06/11/03	56 Y	< 50	< 300
	03/20/03	81	< 50	< 300
	12/11/02	< 50	< 50	< 300
	09/05/02	< 50	< 50	< 300
	02/14/02	88	< 50	< 300
	08/30/01	80	< 50	< 300
	07/19/01	130 Y	130 Y	< 300
	05/25/01	87	< 50	< 300
	04/05/01	150 Y	80 Y	< 300
	12/27/00	NA	< 50	NA
	08/02/00	450	NA	NA
	06/27/00	170	NA	NA
	05/09/00	480 Y	NA	NA
	04/06/00	460 Y	NA	NA
	02/09/00	440 Y	NA	NA
	01/04/00	**810**	NA	NA
	12/03/99	660 Y	NA	NA
	11/18/99	570	< 50	< 300
610SP02	12/09/03	240 Y	< 50	< 300
	08/21/03	85	< 50	< 300
	06/11/03	71 Y	< 50	< 300
	03/20/03	97	< 50	< 300
	12/11/02	130 Y	< 50	< 300
	09/05/02	120 Y	< 50	< 300
	02/14/02	140	< 50	< 300
	08/30/01	190	< 50	< 300
	07/19/01	57 Y	250 Y	< 300
	05/25/01	110	170 Y	< 300
	04/05/01	150 Y	63 Y	< 300
	12/27/00	NA	< 50	NA
	08/02/00	67	NA	NA
	06/27/00	73	NA	NA
	05/09/00	280 Y	NA	NA
	04/06/00	110 Y	NA	NA
	02/09/00	210 Y	NA	NA
	12/03/99	95 Y	NA	NA

Notes

[1] The identified analytical method(s) are for analyses performed beginning in the Second Quarter 2001. The analytical methods used during previous quarters are identified in the respective quarterly reports.

[2] TPH as fuel oil uses a motor oil standard for carbon range (C_{24}-C_{36}).

[3] Cleanup Levels found in Table 4.

Concentrations in **BOLD** indicate an exceedance of applicable cleanup levels.
"CL" suffix denotes a quality control duplicate sample was sent to the control laboratory.
DUP prefix indicates blind duplicate sample.
MSD - Matrix spike duplicate.
MSD indicates to the laboratory which samples were to be used for the MSD quality control sample analyses. These are not matrix spike
NA - not analyzed
TPH - total petroleum hydrocarbon
µg/L - micrograms per liter
g - Laboratory qualifier, "Hydrocarbon reported in the gasoline range does not match our gasoline standard."
J - - Data validation qualifier, "The analyte was positively identified; the associated numerical values is biased low due to a low surrogate recovery and should be considered an approximate concentration of the analyte in the sample."
UJ - Data validation qualifier, "The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample."
Y - Laboratory qualifier, "Sample exhibits a fuel pattern which does not resemble standard."

Table C-8
VOC Results in Groundwater
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	Sample Date	Benzene	Chloro-benzene	Chloro-form	Ethyl-benzene	MTBE	Toluene	Total Xylenes	All Other VOCs
	Analytical Method [1]	SW8020/ SW8021/ SW8260	SW8020/ SW8021/ SW8260	SW8020/ SW8021/ SW8260	SW8020/ SW8021/ SW8260	SW8020/ SW8021/ SW8260	SW8020/ SW8021/ SW8260	SW8020/ SW8021/ SW8260	SW8020/ SW8021/ SW8260
		(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Screening Levels [2]		**1**	**70**	**80**	**43**	**13**	**150**	**130**	**--**
601GG01	08/06/02	< 0.5	NA	NA	< 0.5	< 0.5	< 0.5	< 1	ND
601GG02	08/05/02	< 0.5	NA	NA	< 0.5	< 0.5	0.5	< 1	ND
DUP080502C	08/05/02	< 0.5	NA	NA	< 0.5	< 0.5	0.6	< 1	ND
603GG01	08/05/02	< 0.5	NA	NA	< 0.5	< 0.5	< 0.5	< 1	ND
610GG01	08/05/02	< 0.5	1.1	< 0.5	< 0.5	< 2	< 0.5	< 1	ND
613GG02	08/02/02	< 0.5	< 0.5	< 0.5	< 0.5	< 2	< 0.5	< 1	ND
613GG03	08/02/02	< 0.5	< 0.5	< 0.5	< 0.5	< 2	< 0.5	< 1	ND
613GG07	07/30/02	< 0.5	< 0.5	< 0.5	< 0.5	< 2	< 0.5	< 1 UJ	ND
616GG02	07/30/02	< 0.5	NA	NA	< 0.5	NA	< 0.5	< 1	ND
617GG01	08/01/02	< 0.5	NA	NA	< 0.5	NA	< 0.5	< 1	ND
617GG03	08/01/02	< 0.5	NA	NA	< 0.5	NA	< 0.5	< 1	ND
619GG01	07/31/02	< 0.5	< 0.5	< 0.5	< 0.5	< 2	< 0.5	< 1	ND
619GG04[MSD]	01/23/03	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
DUP012303B	01/23/03	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
625GG03	07/29/02	< 0.5	< 0.5	< 0.5	< 0.5	< 2	< 0.5	< 1 UJ	ND
DUP072902C	07/29/02	< 0.5	< 0.5	< 0.5	< 0.5	< 2	< 0.5	< 1 UJ	ND
626GG01	07/29/02	< 0.5	NA	NA	< 0.5	< 0.5	< 0.5	< 1 UJ	ND
628GG02	07/30/02	< 0.5	< 0.5	< 0.5	< 0.5	< 2	< 0.5	< 1	ND
628GG04	07/30/02	< 0.5	< 0.5	< 0.5	< 0.5	< 2	< 0.5	< 1	ND
628GG09	08/02/02	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5 UJ	< 0.5	< 1	ND
DUP080202B	08/02/02	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1	ND
628GG10	07/30/02	< 0.5	< 0.5	< 0.5	< 0.5	< 2	< 0.5	< 1	ND
DUP073002C	07/30/02	< 0.5	< 0.5	< 0.5	< 0.5	< 2	< 0.5	< 1	ND
T615GG01	08/01/02	< 0.5	< 0.5	< 0.5	< 0.5	< 2	< 0.5	< 1 UJ	ND
T618GG02	08/06/02	< 0.5	< 0.5	< 0.5	< 0.5	< 2	< 0.5	< 1	ND
S15GG01	08/06/02	< 0.5	NA	NA	< 0.5	< 0.5	< 0.5	< 1	ND
600FDSGG01	08/01/02	< 0.5	NA	NA	< 0.5	< 0.5	< 0.5	< 1	ND
DUP080102A	08/01/02	< 0.5	NA	NA	< 0.5	< 0.5	< 0.5	< 1	ND
600CGG01	07/31/02	< 0.5	NA	NA	< 0.5	< 0.5	< 0.5	< 1	ND
600CGG02	07/31/02	< 0.5	NA	NA	< 0.5	< 0.5	< 0.5	< 1	ND
600CGG03	07/29/02	< 0.5	NA	NA	< 0.5	< 0.5	< 0.5	< 1	ND
600CGG04	07/29/02	< 0.5	NA	NA	< 0.5	< 0.5	< 0.5	< 1	ND
600SDGG01	08/06/02	< 0.5	< 0.5	< 0.5	< 0.5	< 2	< 0.5	< 1	ND
600SDGG02	08/01/02	< 0.5	< 0.5	< 0.5	< 0.5	< 2	< 0.5	< 1 UJ	ND
600SDGG03	08/06/02	< 0.5	< 0.5	< 0.5	< 0.5	< 2	< 0.5	1.7	ND
600SDGG04	08/06/02	< 0.5	< 0.5	< 0.5	< 0.5	< 2	< 0.5	< 1	ND
600SDGG05	08/07/02	< 0.5	< 0.5	< 0.5	< 0.5	< 2	< 0.5	< 1	ND
600RRGG02	08/05/02	< 0.5	NA	NA	< 0.5	NA	< 0.5	< 1	ND
600RRGG04	08/07/02	< 0.5	NA	NA	< 0.5	NA	< 0.5	< 1	ND
LTTDGG02	07/29/02	< 0.5	NA	NA	< 0.5	NA	< 0.5	< 1	ND
DUP072902D	07/29/02	< 0.5	NA	NA	< 0.5	NA	< 0.5	< 1	ND
LTTDGG04	07/29/02	< 0.5	NA	NA	< 0.5	NA	< 0.5	< 1	ND
LTTDGG05	07/29/02	< 0.5	NA	NA	< 0.5	NA	< 0.5	< 1	ND
600GW101	12/02/03	< 0.5	NA	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
	08/13/03	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
	06/09/03	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
	03/11/03	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
	12/04/02	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
	09/10/02	< 0.5	< 0.5	< 0.5	< 0.5	< 2.0	< 0.5	< 1.0	ND

Table C-8
VOC Results in Groundwater
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	**Sample Date**	**Benzene**	**Chloro-benzene**	**Chloro-form**	**Ethyl-benzene**	**MTBE**	**Toluene**	**Total Xylenes**	**All Other VOCs**
	Analytical Method [1]	SW8020/ SW8021/ SW8260	SW8020/ SW8021/ SW8260	SW8020/ SW8021/ SW8260	SW8020/ SW8021/ SW8260	SW8020/ SW8021/ SW8260	SW8020/ SW8021/ SW8260	SW8020/ SW8021/ SW8260	SW8020/ SW8021/ SW8260
		(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Screening Levels [2]		**1**	**70**	**80**	**43**	**13**	**150**	**130**	**--**
600GW102	12/02/03	< 0.5	NA	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
	08/13/03	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
	06/09/03	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
	03/11/03	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
	12/04/02	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
600GW102	09/10/02	< 0.5	< 0.5	< 0.5	< 0.5	< 2.0	< 0.5	< 1.0	ND
600GW103	12/02/03	< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
	08/13/03	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
DUP0813033A	08/13/03	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
	06/09/03	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
	03/11/03	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
	12/04/02	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
	09/10/02	< 0.5	< 0.5	< 0.5	< 0.5	< 2.0	< 0.5	< 1.0	ND
600GW104	12/02/03	< 0.5	NA	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
DUP1202033A	12/02/03	< 0.5	NA	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
	08/18/03	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
	06/05/03	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
	03/11/03	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
DUP0311032A	03/11/03	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
600GW104CL	03/11/03	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
	12/04/02	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
	09/10/02	< 0.5	< 0.5	< 0.5	< 0.5	< 2.0	< 0.5	< 1.0	ND
DUP0910021A	09/10/02	< 0.5	< 0.5	< 0.5	< 0.5	< 2.0	< 0.5	< 1.0	ND
600GW105	12/02/03	< 0.5	NA	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
	08/13/03	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
	06/05/03	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
DUP0605033A	06/05/03	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
	03/12/03	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
	12/04/02	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
	09/11/02	< 0.5	< 0.5	< 0.5	< 0.5	< 2	< 0.5	< 1	ND
600GW106	12/02/03	< 0.5	NA	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
	08/13/03	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
	06/05/03	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
	03/12/03	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
	12/04/02	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
	09/11/02	< 0.5	< 0.5	< 0.5	< 0.5	< 2	< 0.5	< 1	ND
600GW107	12/03/03	< 0.5	NA	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
	08/13/03	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
	06/06/03	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
	03/11/03	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
	12/04/02	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
	09/11/02	< 0.5	< 0.5	< 0.5	< 0.5	< 2	< 0.5	< 1	ND
600GW108	12/03/03	< 0.5	NA	7.9	< 0.5	< 0.5	< 0.5	< 0.5	ND
	08/13/03	< 0.5	< 0.5	1.3	< 0.5	< 0.5	< 0.5	< 0.5	ND
	06/05/03	< 0.5	< 0.5	4.7	< 0.5	< 0.5	< 0.5	< 0.5	ND
	03/12/03	< 0.5	< 0.5	3.7	< 0.5	< 0.5	< 0.5	< 0.5	ND
	12/09/02	< 0.5	< 0.5	2.7	< 0.5	< 0.5 UJ	< 0.5	< 0.5	ND
DUP1209022C	12/09/02	< 0.5	< 0.5	3	< 0.5	< 0.5 UJ	< 0.5	< 0.5	ND
600GW108CL	12/09/02	< 0.5	< 0.5	2.6	< 0.5	< 0.5	< 0.5	< 0.5	ND
	09/10/02	< 0.5	< 0.5	< 0.5	< 0.5	< 2.0	< 0.5	< 1.0	ND

Table C-8
VOC Results in Groundwater
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	Sample Date	Benzene	Chloro-benzene	Chloro-form	Ethyl-benzene	MTBE	Toluene	Total Xylenes	All Other VOCs
	Analytical Method [1]	SW8020/ SW8021/ SW8260	SW8020/ SW8021/ SW8260	SW8020/ SW8021/ SW8260	SW8020/ SW8021/ SW8260	SW8020/ SW8021/ SW8260	SW8020/ SW8021/ SW8260	SW8020/ SW8021/ SW8260	SW8020/ SW8021/ SW8260
		(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Screening Levels [2]		**1**	**70**	**80**	**43**	**13**	**150**	**130**	**--**
600GW109	12/03/03	< 0.5	NA	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
	08/13/03	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
	06/05/03	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
	03/11/03	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
	12/04/02	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
	09/10/02	< 0.5	< 0.5	< 0.5	< 0.5	< 2.0	< 0.5	< 1.0	ND
610GW101	12/02/03	< 0.5	NA	NA	< 0.5	< 2	< 0.5	< 0.5	NA
	08/14/03	< 0.5	NA	NA	< 0.5	3	< 0.5	< 0.5	ND
DUP0814033A	08/14/03	< 0.5	NA	NA	< 0.5	2.9	< 0.5	< 0.5	ND
610GW101CL	08/14/03	< 0.5	NA	NA	< 0.5	< 2.5	0.81	0.71	ND
	06/04/03	< 0.5	NA	NA	< 0.5	< 2	< 0.5	< 0.5	ND
DUP0604033B	06/04/03	< 0.5	NA	NA	< 0.5	< 2	< 0.5	< 0.5	ND
610GW101CL	06/04/03	< 0.5	NA	NA	< 0.5	< 2.5	< 0.5	< 0.5	ND
	03/11/03	< 0.5	NA	NA	< 0.5	2.7	< 0.5	< 0.5	ND
	12/03/02	< 0.5	NA	NA	< 0.5	2.2	< 0.5	< 0.5	ND
	08/29/02	< 0.5	NA	NA	< 0.5	< 2	< 0.5	< 0.5	ND
	05/29/02	< 0.5	NA	NA	< 0.5	< 2	< 0.5	< 0.5	ND
	03/05/02	< 0.5	NA	NA	< 0.5	< 2	< 0.5	< 0.5	ND
	12/03/01	< 0.5	NA	NA	< 0.5	< 2	< 0.5	< 0.5	ND
	08/29/01	< 0.5	NA	NA	< 0.5	< 2	< 0.5	< 0.5	ND
610GW102	12/02/03	0.53	NA	NA	< 0.5	< 2	< 0.5	< 0.5	NA
	08/18/03	< 0.5	NA	NA	< 0.5	< 2	< 0.5	< 0.5	ND
	06/05/03	< 0.5	NA	NA	< 0.5	< 2	< 0.5	< 0.5	ND
	03/11/03	< 0.5	NA	NA	< 0.5	2.4	< 0.5	< 0.5	ND
DUP0311033A	03/11/03	< 0.5	NA	NA	< 0.5	< 2	< 0.5	< 0.5	ND
	12/03/02	< 0.5	NA	NA	< 0.5	< 2	< 0.5	< 0.5	ND
	08/29/02	< 0.5	NA	NA	< 0.5	< 2	< 0.5	< 0.5	ND
	05/29/02	< 0.5	NA	NA	< 0.5	< 2	< 0.5	< 0.5	ND
	03/05/02	< 0.5	NA	NA	0.78	< 2	< 0.5	< 0.5	ND
	12/03/01	< 0.5	NA	NA	< 0.5	< 2	< 0.5	< 0.5	ND
	08/29/01	< 0.5	NA	NA	< 0.5	< 2	< 0.5	< 0.5	ND
610GW103	12/03/03	< 0.5	NA	NA	< 0.5	< 2	< 0.5	< 0.5	NA
DUP1203033A	12/3/2003	< 0.5	NA	NA	< 0.5	< 2	< 0.5	< 0.5	NA
610GW103CL	12/3/2003	< 0.5	NA	NA	< 0.5	< 2	< 0.5	0.64	NA
	08/18/03	< 0.5	NA	NA	< 0.5	< 2	< 0.5	< 0.5	ND
DUP0818033A	08/18/03	< 0.5	NA	NA	< 0.5	< 2	< 0.5	< 0.5	ND
	06/05/03	< 0.5	NA	NA	0.69 C	< 2	< 0.5	< 0.5	ND
	03/11/03	< 0.5	NA	NA	< 0.5	< 2	< 0.5	< 0.5	ND
	12/03/02	< 0.5	NA	NA	< 0.5	< 2	< 0.5	< 0.5	ND
DUP1203022A	12/03/02	< 0.5	NA	NA	< 0.5	< 2	< 0.5	< 0.5	ND
	08/29/02	< 0.5	NA	NA	< 0.5	< 2	< 0.5	< 0.5	ND
	05/30/02	< 0.5	NA	NA	1	< 2	< 0.5	< 0.5	ND
DUP0530022A	05/30/02	< 0.5	NA	NA	< 0.5	< 2	< 0.5	< 0.5	ND
610GW103CL	05/30/02	< 0.5	NA	NA	< 0.5	< 5	< 0.5	< 0.5	ND
	03/05/02	< 0.5	NA	NA	< 0.5	< 2	< 0.5	< 0.5	ND
DUP0305023A	03/05/02	< 0.5	NA	NA	< 0.5	< 2	< 0.5	< 0.5	ND
610GW103CL	03/05/02	< 0.5	NA	NA	< 0.5	NA	< 0.5	< 0.5	ND
	12/03/01	< 0.5	NA	NA	< 0.5	< 2	< 0.5	< 0.5	ND
DUP1203011A	12/03/01	< 0.5	NA	NA	< 0.5	< 2	< 0.5	< 0.5	ND
610GW103CL	12/03/01	< 0.5	NA	NA	< 0.5	< 5	< 0.5	< 0.5	ND
	08/29/01	< 0.5	NA	NA	4.9	< 2	< 0.5	0.93	ND

Table C-8
VOC Results in Groundwater
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	Sample Date	Benzene	Chloro-benzene	Chloro-form	Ethyl-benzene	MTBE	Toluene	Total Xylenes	All Other VOCs
	Analytical Method [1]	SW8020/ SW8021/ SW8260	SW8020/ SW8021/ SW8260	SW8020/ SW8021/ SW8260	SW8020/ SW8021/ SW8260	SW8020/ SW8021/ SW8260	SW8020/ SW8021/ SW8260	SW8020/ SW8021/ SW8260	SW8020/ SW8021/ SW8260
		(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Screening Levels [2]		**1**	**70**	**80**	**43**	**13**	**150**	**130**	**--**
610SP01	12/09/03	< 0.5	NA	NA	< 0.5	< 2	< 0.5	< 0.5	NA
DUP1209031A	12/09/03	< 0.5	NA	NA	< 0.5	< 2	< 0.5	< 0.5	NA
610SP01CL	12/09/03	< 0.5	NA	NA	< 0.5	< 2.5	< 0.5	< 0.5	NA
	08/21/03	< 0.5	NA	NA	< 0.5	< 2	< 0.5	< 0.5	ND
	06/11/03	< 0.5	NA	NA	< 0.5	< 2	< 0.5	< 0.5	ND
	03/20/03	< 0.5	NA	NA	0.54 C	< 2	< 0.5	< 0.5	ND
	12/11/02	< 0.5	NA	NA	< 0.5	< 2	< 0.5	< 0.5	ND
	09/05/02	< 0.5	NA	NA	< 0.5	< 2	< 0.5	< 0.5	ND
	08/30/01	< 0.5	NA	NA	< 0.5	2.5	< 0.5	< 0.5	ND
	07/19/01	< 0.5	NA	NA	2.3 C	2.7	< 0.5	< 0.5	ND
	05/25/01	< 0.5	NA	NA	< 0.5	< 2.0	< 0.5	< 0.5	ND
	04/05/01	< 0.5	NA	NA	< 0.5	2.2	< 0.5	0.85	ND
	08/02/00	< 0.5	NA	NA	2.1	< 2	1.3	1.4	ND
	06/27/00	< 0.5	NA	NA	< 0.5	< 2	< 0.5	0.8	ND
	05/09/00	< 0.5	NA	NA	3	3.3 C	0.93	< 0.5	ND
	04/06/00	< 0.5	NA	NA	6.8 C	< 2	4.8 C	< 0.5	ND
	02/09/00	< 0.5	NA	NA	4.9 C	2	4.9	< 0.5	ND
	01/04/00	< 0.5	NA	NA	4.7	NA	< 0.5	1.2 C	ND
	12/03/99	< 0.5	NA	NA	11 C	NA	6.4	1.7	ND
	11/18/99	< 0.5	NA	NA	3.7	NA	3.8	3.8	ND
610SP02	12/09/03	< 0.5	NA	NA	< 0.5	< 2	< 0.5	0.58	NA
	08/21/03	< 0.5	NA	NA	< 0.5	**15**	< 0.5	< 0.5	ND
	06/11/03	< 0.5	NA	NA	< 0.5	< 2	< 0.5	< 0.5	ND
	03/20/03	< 0.5	NA	NA	1.7 C	< 2	< 0.5	0.52	ND
	12/11/02	< 0.5	NA	NA	< 0.5	< 2	< 0.5	< 0.5	ND
	09/05/02	< 0.5	NA	NA	< 0.5	< 2	< 0.5	< 0.5	ND
	08/30/01	< 0.5	NA	NA	1.4 C	< 2.0	< 0.5	0.6	ND
	07/19/01	< 0.5	NA	NA	< 0.5	3	< 0.5	< 0.5	ND
	05/25/01	< 0.5	NA	NA	< 0.5	4	< 0.5	< 0.5	ND
	04/05/01	< 0.5	NA	NA	< 0.5	< 2.0	< 0.5	< 0.5	ND
	08/02/00	< 0.5	NA	NA	< 0.5	< 2	< 0.5	< 0.5	ND
	06/27/00	< 0.5	NA	NA	< 0.5	< 2	< 0.5	< 0.5	ND
	05/09/00	< 0.5	NA	NA	1.3	< 2	0.69 C	< 0.5	ND
	04/06/00	< 0.5	NA	NA	< 0.5	< 2	< 0.5	< 0.5	ND
	02/09/00	< 0.5	NA	NA	2.1	< 2.0	< 0.5	< 0.5	ND
	12/03/99	< 0.5	NA	NA	0.82 C	NA	< 0.5	< 0.5	ND

Notes
[1] The identified analytical method(s) are for analyses performed beginning in the Second Quarter 2001.
The analytical methods used during previous quarters are identified in the respective quarterly reports.
[2] Screening Levels were obtained from Table 1a of the *Draft Site Investigation Report Commissary/Post Exchange Study Area Presidio of San Francisco, California* (Treadwell& Rollo, 2003c).
Concentrations in **BOLD** indicate an exceedance of applicable cleanup levels.
"CL" suffix denotes a quality control duplicate sample was sent to the control laboratory.
DUP prefix indicates a blind duplicate sample
MTBE - methyl tertiary butyl ether
NA - not analyzed
ND - not detected
MSD - Matrix spike duplicate.
MSD indicates to the laboratory which samples were to be used for the MSD quality control sample analyses. These are not matrix spike
VOC - volatile organic compound
µg/L - micrograms per liter
UJ - Data validation qualifier, "The analyte was not detected above the reported sample quantitation limit. However, the
reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately

Table C-9
PAH Results in Groundwater
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	**Sample Date**	**Acenaph-thene**	**Anthracene**	**Benzo(a)-Anthracene**	**Benzo(a)-Pyrene**	**Benzo(b)-Fluoranthene**	**Benzo(g,h,i)-Perylene**	**Benzo(k)-Fluoranthene**	**Chrysene**	**Dibenz(a,h)-Anthracene**	**Fluor-anthene**	**Indeno (1,2,3-c,d) Pyrene**	**Phen-anthrene**	**Pyrene**	**All Other PAHs**
	Analytical Method[1]	SW8270/ SW8310	SW8270/ SW8310	SW8270/ SW8310	SW8270/ SW8310	SW8270/ SW8310	SW8270/ SW8310	SW8270/ SW8310	SW8270/ SW8310	SW8270/ SW8310	SW8270/ SW8310	SW8270/ SW8310	SW8270/ SW8310	SW8270/ SW8310	SW8270/ SW8310
		(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Cleanup Levels [2]		**--**	**770**	**0.1**	**0.2**	**0.2**	**150**	**2**	**20**	**--**	**300**	**--**	**230**	**230**	**--**
601GG02	08/05/02	< 5	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1	< 0.2	ND
DUP080502C	08/05/02	< 5	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1	< 0.2	ND
603GG01	08/05/02	< 5	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1	< 0.2	ND
610GG01	08/05/02	< 5	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1	< 0.2	ND
613GG02	08/02/02	< 5	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1	< 0.2	ND
613GG03	08/02/02	< 5	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1	< 0.2	ND
613GG07	07/30/02	< 5	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1	< 0.2	ND
613GG11	01/21/03	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	ND
613GG12	01/21/03	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	0.2	0.4	0.25	ND
617GG01	08/01/02	< 5	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1	< 0.2	ND
617GG03	08/01/02	< 5	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1	< 0.2	ND
619GG01	07/31/02	< 5	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1	< 0.2	ND
619GG04[MSD]	01/23/03	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	ND
DUP012303B	01/23/03	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	ND
625GG03	07/29/02	< 5	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1	< 0.2	ND
DUP072902C	07/29/02	< 5	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1	< 0.2	ND
626GG01	07/29/02	< 5	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1	< 0.2	ND
628GG02	07/30/02	< 5	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1	< 0.2	ND
628GG04	07/30/02	< 5	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1	< 0.2	ND
628GG09	08/02/02	< 5	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1	< 0.2	ND
DUP080202B	08/02/02	< 5	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1	< 0.2	ND
628GG10	07/30/02	< 5	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1	< 0.2	ND
DUP073002C	07/30/02	< 5	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1	< 0.2	ND
T615GG01	08/01/02	< 5	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1	< 0.2	ND
T618GG02	08/06/02	< 5	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1	< 0.2	ND
S15GG01	08/06/02	< 5	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1	< 0.2	ND
600AGG01	08/07/02	< 5	< 0.2	**0.2**	0.2	< 0.2	< 0.2	< 0.2	0.2	< 0.5	0.3	< 0.2	< 1	0.4	ND
600AGG02	08/01/02	< 5	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1	< 0.2	ND
600AGG03	08/01/02	< 5 UJ	< 0.2 UJ	< 0.1 UJ	< 0.2 UJ	< 0.2 UJ	< 0.2 UJ	< 0.2 UJ	< 0.2 UJ	< 0.5 UJ	< 0.2 UJ	< 0.2 UJ	< 1 UJ	< 0.2 UJ	ND
600AGG04	08/01/02	< 5	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1	< 0.2	ND
600AGG05	08/01/02	< 5	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1	< 0.2	ND
600AGG06	08/01/02	< 5	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1	< 0.2	ND
600FDSGG01	08/01/02	< 5	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1	< 0.2	ND
DUP080102A	08/01/02	< 5	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1	< 0.2	ND
600CGG01	07/31/02	< 5	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1	< 0.2	ND
600CGG02	07/31/02	< 5	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1	< 0.2	ND
600CGG03	07/29/02	< 5	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1	< 0.2	ND
600CGG04	07/29/02	< 5	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1	< 0.2	ND
600SDGG01	08/06/02	< 5	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1	< 0.2	ND
600SDGG02	08/01/02	< 5	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1	< 0.2	ND
600SDGG03	08/06/02	< 5	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1	< 0.2	ND
600SDGG04	08/06/02	< 5	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1	< 0.2	ND
600SDGG05	08/07/02	< 5	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1	< 0.2	ND

Table C-9
PAH Results in Groundwater
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	Sample Date	Acenaph-thene	Anthracene	Benzo(a)-Anthracene	Benzo(a)-Pyrene	Benzo(b)-Fluoranthene	Benzo(g,h,i)-Perylene	Benzo(k)-Fluoranthene	Chrysene	Dibenz(a,h)-Anthracene	Fluor-anthene	Indeno (1,2,3-c,d) Pyrene	Phen-anthrene	Pyrene	All Other PAHs
	Analytical Method[1]	SW8270/ SW8310	SW8270/ SW8310	SW8270/ SW8310	SW8270/ SW8310	SW8270/ SW8310	SW8270/ SW8310	SW8270/ SW8310	SW8270/ SW8310	SW8270/ SW8310	SW8270/ SW8310	SW8270/ SW8310	SW8270/ SW8310	SW8270/ SW8310	SW8270/ SW8310
		(μg/L)	(μg/L)	(μg/L)	(μg/L)	(μg/L)	(μg/L)	(μg/L)	(μg/L)	(μg/L)	(μg/L)	(μg/L)	(μg/L)	(μg/L)	(μg/L)
Cleanup Levels [2]		**--**	**770**	**0.1**	**0.2**	**0.2**	**150**	**2**	**20**	**--**	**300**	**--**	**230**	**230**	**--**
600RRGG02	08/05/02	< 5 UJ	< 0.2 UJ	< 0.1 UJ	< 0.2 UJ	< 0.2 UJ	< 0.2 UJ	< 0.2 UJ	< 0.2 UJ	< 0.5 UJ	< 0.2 UJ	< 0.2 UJ	< 1 UJ	< 0.2 UJ	ND
600RRGG04	08/07/02	< 5	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1	< 0.2	ND
600RRGG06	01/21/03	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	ND
600RRGG07	01/22/03	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	ND
LTTDGG02	07/29/02	< 5	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1	< 0.2	ND
DUP072902D	07/29/02	< 5	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1	< 0.2	ND
LTTDGG04	07/29/02	< 5	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1	< 0.2	ND
LTTDGG05	07/29/02	< 5	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1	< 0.2	ND
600GW101	12/02/03	< 0.95	< 0.48	< 0.1	< 0.1	< 0.19	< 0.19	< 0.1	< 0.1	< 0.19	< 0.38	< 0.13	< 0.48	< 0.19	ND
	08/13/03	< 0.95	< 0.48	< 0.1	< 0.1	< 0.19	< 0.19	< 0.1	< 0.1	< 0.19	< 0.38	< 0.13	< 0.48	< 0.19	ND
	06/09/03	< 0.94	< 0.47	< 0.09	< 0.09	< 0.19	< 0.19	< 0.09	< 0.09	< 0.19	< 0.38	< 0.13	< 0.47	< 0.19	ND
	03/11/03	< 0.96	< 0.48	< 0.1	< 0.1	< 0.19	< 0.19	< 0.1	< 0.1	< 0.19	< 0.38	< 0.13	< 0.48	< 0.19	ND
	12/04/02	< 1	< 0.5	< 0.1	< 0.1	< 0.2	< 0.2	< 0.1	< 0.1	< 0.2	< 0.4	< 0.14	< 0.5	< 0.2	ND
	09/10/02	< 5.0	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1.0	< 0.2	ND
600GW102	12/02/03	< 0.95	< 0.48	< 0.1	< 0.1	< 0.19	< 0.19	< 0.1	< 0.1	< 0.19	< 0.38	< 0.13	< 0.48	< 0.19	ND
	08/13/03	< 0.95	< 0.48	< 0.1	< 0.1	< 0.19	< 0.19	< 0.1	< 0.1	< 0.19	< 0.38	< 0.13	< 0.48	< 0.19	ND
	06/09/03	< 0.95	< 0.48	< 0.1	< 0.1	< 0.19	< 0.19	< 0.1	< 0.1	< 0.19	< 0.38	< 0.13	< 0.48	< 0.19	ND
	03/11/03	< 0.96	< 0.48	< 0.1	0.1	< 0.19	< 0.19	< 0.1	< 0.1	< 0.19	< 0.38	< 0.13	< 0.48	< 0.19	ND
	12/04/02	< 0.97	< 0.49	< 0.1	< 0.1	< 0.19	< 0.19	< 0.1	< 0.1	< 0.19	< 0.39	< 0.14	< 0.49	< 0.19	ND
	09/10/02	< 5.0	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1.0	< 0.2	ND
600GW103	12/02/03	7.3	< 0.48	< 0.1	< 0.1	< 0.19	< 0.19	< 0.1	< 0.1	< 0.19	< 0.38	< 0.13	< 0.48	< 0.19	ND
	08/13/03	9	< 0.47	< 0.09	< 0.09	< 0.19	< 0.19	< 0.09	< 0.09	< 0.19	< 0.38	< 0.13	< 0.47	< 0.19	ND
DUP0813033A	08/13/03	7.4	< 0.48	< 0.1	< 0.1	< 0.19	< 0.19	< 0.1	< 0.1	< 0.19	< 0.38	< 0.13	< 0.48	< 0.19	ND
600GW103	06/09/03	8.9	< 0.48	< 0.1	< 0.1	< 0.19	< 0.19	< 0.1	< 0.1	< 0.19	< 0.38	< 0.13	< 0.48	< 0.19	ND
	03/11/03	5.6	< 0.48	< 0.1	0.18	< 0.19	< 0.19	< 0.1	< 0.1	< 0.19	< 0.38	< 0.13	< 0.48	< 0.19	ND
	12/04/02	6.4	< 0.47	< 0.09	**0.34**	< 0.19	< 0.19	< 0.09	< 0.09	< 0.19	< 0.38	< 0.13	< 0.47	< 0.19	ND
	09/10/02	< 5.0	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1.0	< 0.2	ND
600GW104	12/02/03	< 0.94	< 0.47	< 0.09	< 0.09	< 0.19	< 0.19	< 0.09	< 0.09	< 0.19	< 0.38	< 0.13	< 0.47	< 0.19	ND
DUP1202033A	12/02/03	< 0.94	< 0.47	< 0.09	< 0.09	< 0.19	< 0.19	< 0.09	< 0.09	< 0.19	< 0.38	< 0.13	< 0.47	< 0.19	ND
	08/18/03	< 0.95	< 0.48	< 0.1	< 0.1	< 0.19	< 0.19	< 0.1	< 0.1	< 0.19	< 0.38	< 0.13	< 0.48	< 0.19	ND
	06/05/03	< 0.94	< 0.47	< 0.09	< 0.09	< 0.19	< 0.19	< 0.09	< 0.09	< 0.19	< 0.38	< 0.13	< 0.47	< 0.19	ND
	03/11/03	< 0.97	< 0.49	< 0.1	< 0.1	< 0.19	< 0.19	< 0.1	0.14	< 0.19	< 0.39	< 0.14	< 0.49	< 0.19	ND
DUP0311032A	03/11/03	< 0.96	< 0.48	< 0.1	< 0.1	< 0.19	< 0.19	< 0.1	< 0.1	< 0.19	< 0.38	< 0.13	< 0.48	< 0.19	ND
600GW104CL	03/11/03	< 0.5	< 0.05	< 0.05	< 0.05	< 0.1	< 0.1	< 0.05	< 0.05	< 0.2	< 0.1	< 0.05	< 0.05	< 0.05	ND
	12/04/02	< 0.94 UJ	< 0.47 UJ	< 0.09 UJ	< 0.09 UJ	< 0.19 UJ	< 0.19 UJ	< 0.09 UJ	< 0.09 UJ	< 0.19 UJ	< 0.38 UJ	< 0.13 UJ	< 0.47 UJ	< 0.19 UJ	ND
	09/10/02	< 5.0	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1.0	< 0.2	ND
DUP0910021A	09/10/02	< 5.0	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1.0	< 0.2	ND
600GW105	12/02/03	< 0.95	< 0.48	< 0.1	< 0.1	< 0.19	< 0.19	< 0.1	< 0.1	< 0.19	< 0.38	< 0.13	< 0.48	< 0.19	ND
	08/13/03	< 0.96	< 0.48	< 0.1	< 0.1	< 0.19	< 0.19	< 0.1	< 0.1	< 0.19	< 0.38	< 0.13	< 0.48	< 0.19	ND
	06/05/03	< 0.94	< 0.47	< 0.09	< 0.09	< 0.19	< 0.19	< 0.09	< 0.09	< 0.19	< 0.38	< 0.13	< 0.47	< 0.19	ND
DUP0605033A	06/05/03	< 0.94	< 0.47	< 0.09	< 0.09	< 0.19	< 0.19	< 0.09	< 0.09	< 0.19	< 0.38	< 0.13	< 0.47	< 0.19	ND
	03/12/03	< 0.97	< 0.49	< 0.1	< 0.1	< 0.19	< 0.19	< 0.1	< 0.1	< 0.19	< 0.39	< 0.14	< 0.49	< 0.19	ND
	12/04/02	< 0.94	< 0.47	< 0.09	< 0.09	< 0.19	< 0.19	< 0.09	< 0.09	< 0.19	< 0.38	< 0.13	< 0.47	< 0.19	ND
	09/11/02	< 5	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1	< 0.2	ND

Table C-9
PAH Results in Groundwater
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	**Sample Date**	**Acenaph-thene**	**Anthracene**	**Benzo(a)-Anthracene**	**Benzo(a)-Pyrene**	**Benzo(b)-Fluoranthene**	**Benzo(g,h,i)-Perylene**	**Benzo(k)-Fluoranthene**	**Chrysene**	**Dibenz(a,h)-Anthracene**	**Fluor-anthene**	**Indeno (1,2,3-c,d) Pyrene**	**Phen-anthrene**	**Pyrene**	**All Other PAHs**
	Analytical Method[1]	SW8270/ SW8310	SW8270/ SW8310	SW8270/ SW8310	SW8270/ SW8310	SW8270/ SW8310	SW8270/ SW8310	SW8270/ SW8310	SW8270/ SW8310	SW8270/ SW8310	SW8270/ SW8310	SW8270/ SW8310	SW8270/ SW8310	SW8270/ SW8310	SW8270/ SW8310
		(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Cleanup Levels [2]		**--**	**770**	**0.1**	**0.2**	**0.2**	**150**	**2**	**20**	**--**	**300**	**--**	**230**	**230**	**--**
600GW106	12/02/03	< 0.95	< 0.48	< 0.1	< 0.1	< 0.19	< 0.19	< 0.1	< 0.1	< 0.19	< 0.38	< 0.13	< 0.48	< 0.19	ND
	08/13/03	< 0.95	< 0.48	< 0.1	< 0.1	< 0.19	< 0.19	< 0.1	< 0.1	< 0.19	< 0.38	< 0.13	< 0.48	< 0.19	ND
	06/05/03	< 0.94	< 0.47	< 0.09	< 0.09	< 0.19	< 0.19	< 0.09	< 0.09	< 0.19	< 0.38	< 0.13	< 0.47	< 0.19	ND
	03/12/03	< 0.97	< 0.49	< 0.1	< 0.1	< 0.19	< 0.19	< 0.1	< 0.1	< 0.19	< 0.39	< 0.14	< 0.49	< 0.19	ND
	12/04/02	< 0.94	< 0.47	< 0.09	< 0.09	< 0.19	< 0.19	< 0.09	< 0.09	< 0.19	< 0.38	< 0.13	< 0.47	< 0.19	ND
	09/11/02	< 5	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1	< 0.2	ND
600GW107	08/13/03	< 1	< 0.5	< 0.1	< 0.1	< 0.2	< 0.2	< 0.1	< 0.1	< 0.2	0.05 J	< 0.14	< 0.5	< 0.2	ND
	06/06/03	< 0.94	< 0.47	< 0.09	< 0.09	< 0.19	< 0.19	< 0.09	0.1	< 0.19	0.07 J	< 0.13	< 0.47	< 0.19	ND
	03/11/03	< 0.95	0.19 J	**0.24**	**0.22**	**0.34**	0.4	0.15	0.62	0.4	0.49	0.21	0.51	0.53	ND
600GW108	12/03/03	< 0.95	< 0.48	< 0.1	< 0.1	< 0.19	< 0.19	< 0.1	< 0.1	< 0.19	< 0.38	< 0.13	< 0.48	< 0.19	ND
	08/13/03	< 0.95	< 0.48	< 0.1	< 0.1	< 0.19	< 0.19	< 0.1	< 0.1	< 0.19	< 0.38	< 0.13	< 0.48	< 0.19	ND
	06/05/03	< 0.94	< 0.47	< 0.09	< 0.09	< 0.19	< 0.19	< 0.09	< 0.09	< 0.19	< 0.38	< 0.13	< 0.47	< 0.19	ND
	03/12/03	< 0.96	< 0.48	< 0.1	< 0.1	< 0.19	< 0.19	< 0.1	< 0.1	< 0.19	< 0.38	< 0.13	< 0.48	< 0.19	ND
	12/09/02	< 0.94	< 0.47	< 0.09	< 0.09	< 0.19	< 0.19	< 0.09	< 0.09	< 0.19	< 0.38	< 0.13	< 0.47	< 0.19	ND
DUP1209022C	12/09/02	< 0.94	< 0.47	< 0.09	< 0.09	< 0.19	< 0.19	< 0.09	< 0.09	< 0.19	< 0.38	< 0.13	< 0.47	< 0.19	ND
600GW108CL	12/09/02	< 0.5	< 0.05	< 0.05	< 0.05	< 0.1	< 0.1	< 0.05	< 0.05	< 0.2	< 0.1	< 0.05	< 0.05	< 0.05	ND
	09/10/02	< 5.0	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1.0	< 0.2	ND
600GW109	12/03/03	< 0.94	< 0.47	< 0.09	< 0.09	< 0.19	< 0.19	< 0.09	< 0.09	< 0.19	< 0.38	< 0.13	< 0.47	< 0.19	ND
	08/13/03	< 0.95	< 0.48	< 0.1	< 0.1	< 0.19	< 0.19	< 0.1	< 0.1	< 0.19	< 0.38	< 0.13	< 0.48	< 0.19	ND
	06/05/03	< 0.95	< 0.48	< 0.1	< 0.1	< 0.19	< 0.19	< 0.1	< 0.1	< 0.19	< 0.38	< 0.13	< 0.48	< 0.19	ND
	03/11/03	< 0.96	< 0.48	< 0.1	0.11	< 0.19	< 0.19	< 0.1	< 0.1	< 0.19	< 0.38	< 0.13	< 0.48	< 0.19	ND
	12/04/02	< 0.94	< 0.47	< 0.09	0.15	< 0.19	< 0.19	< 0.09	< 0.09	< 0.19	< 0.38	< 0.13	< 0.47	< 0.19	ND
	09/10/02	< 5.0	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 1.0	< 0.2	ND

Notes

[1] The identified analytical method(s) are for analyses performed beginning in the Second Quarter 2001. The analytical methods used during previous quarters are identified in the respective quarterly reports.

[2] Cleanup Levels found in Table 4.

BOLD values indicate concentration exceeding cleanup levels

"CL" suffix denotes a quality control duplicate sample was sent to the control laboratory.

DUP prefix indicates a blind duplicate sample.

NA - not analyzed

ND - not detected

NE - Not established

PAHs - Polycyclic aromatic hydrocarbons

µg/L - micrograms per liter

UJ - Data validation qualifier, "The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample."

Insufficient water volume for laboratory analyses

Table C-10
Metals Results in Groundwater
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	Sample Date	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc
	Analytical Method [1]	SW6020	SW6020	SW6020	SW6020	SW6020	SW6020	SW6020
		(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Cleanup Levels [2]		**10**	**5**	**50**	**2.9**	**5.6**	**7.1**	**58**
601GG02	08/05/02	< 5	< 5	< 10	< 20	< 15	< 50	< 20
DUP080502C	08/05/02	< 5	< 5	< 10	< 20	< 15	< 50	< 20
603GG01	08/05/02	< 5	< 5	< 10	< 20	< 15	< 50	< 20
610GG01	08/05/02	NA	< 5	< 10	< 20	< 15	< 50	< 20
613GG02	08/02/02	NA	< 5	16	< 20	< 15	< 50	< 20
613GG03	08/02/02	NA	< 5	20	< 20	< 15	< 50	< 20
613GG07	07/30/02	NA	< 5	< 10	< 20	< 15	< 50	< 20
613GG11	01/21/03	NA	NA	< 10	NA	< 3	< 10	< 20
613GG12	01/21/03	NA	NA	< 10	NA	< 3	< 10	< 20
616GG02	07/30/02	NA	NA	NA	NA	< 15	NA	NA
617GG01	08/01/02	NA	NA	NA	NA	< 15	NA	NA
617GG03	08/01/02	NA	NA	NA	NA	< 15	NA	NA
619GG01	07/31/02	NA	< 5	< 10	< 20	< 15	< 50	< 20
619GG04[MSD]	01/23/03	NA	NA	< 10	< 10 UJ	< 3	< 10	< 20 UJ
DUP012303B	01/23/03	NA	NA	< 10	< 10 UJ	< 3	< 10	< 20 UJ
619GG05	01/23/03	NA	NA	< 10	NA	NA	< 10	NA
625GG03	07/29/02	NA	< 5	< 10	< 20	< 15	< 50	< 20
626GG01	07/29/02	NA	< 5	< 10	< 20	< 15	< 50	< 20
628GG02	07/30/02	NA	< 5	< 10	< 20	< 15	< 50	< 20
628GG04	07/30/02	NA	< 5	< 10	< 20	< 15	< 50	< 20
628GG09	08/02/02	NA	< 5	< 10	< 20	< 15	< 50	< 20
DUP080202B	08/02/02	NA	< 5	< 10	< 20	< 15	< 50	< 20
628GG10	07/30/02	NA	< 5	< 10	< 20	< 15	< 50	< 20
DUP073002C	07/30/02	NA	< 5	< 10	< 20	< 15	< 50	< 20
T615GG01	08/01/02	NA	< 5	< 10	< 20	< 15	< 50	< 20
T618GG02	08/06/02	NA	< 5	< 10	< 20	< 15	< 50	< 20
S15GG01	08/06/02	NA	NA	NA	NA	< 15	NA	NA
600CGG01	07/31/02	NA	NA	NA	NA	< 15	NA	NA
600CGG02	07/31/02	NA	NA	NA	NA	< 15	NA	NA
600CGG03	07/29/02	NA	NA	NA	NA	< 15	NA	NA
600CGG04	07/29/02	NA	NA	NA	NA	< 15	NA	NA
600SDGG01	08/06/02	NA	< 5	< 10	< 20	< 15	< 50	< 20
600SDGG02	08/01/02	NA	< 5	< 10	< 20	< 15	< 50	< 20
600SDGG03	08/06/02	NA	< 5	< 10	< 20	< 75	< 50	< 20
600SDGG04	08/06/02	NA	< 5	< 10	< 20	< 15	< 50	< 20
600SDGG05	08/07/02	NA	< 5	< 10	< 20	< 15	< 50	< 20
600RRGG02	08/05/02	**17**	< 5	18	< 20	< 15	< 50	< 20
600RRGG04	08/07/02	< 5	< 5	< 10	< 20	< 15	< 50	< 20
600RRGG06	01/21/03	NA	NA	< 10	NA	< 3	< 10	< 20
600RRGG07	01/22/03	NA	NA	< 10	NA	< 3	< 10	< 20

Table C-10
Metals Results in Groundwater
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	Sample Date	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc
	Analytical Method [1]	SW6020	SW6020	SW6020	SW6020	SW6020	SW6020	SW6020
		(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Cleanup Levels [2]		**10**	**5**	**50**	**2.9**	**5.6**	**7.1**	**58**
LTTDGG02	07/29/02	NA	< 5	< 10	< 20	< 15	< 50	< 20
LTTDGG04	07/29/02	NA	< 5	< 10	< 20	< 15	< 50	< 20
DUP072902D	07/29/02	NA	< 5	< 10	< 20	< 15	< 50	< 20
LTTDGG05	07/29/02	NA	< 5	< 10	< 20	< 15	< 50	< 20
600GW101	12/02/03	< 5	< 1	< 10	< 1	< 3	< 20	< 20
	08/13/03	< 5	< 1	< 10	2.3	< 3	< 20	< 20
	06/09/03	< 5	< 1	< 10	< 1	< 3	< 20	< 20
	03/11/03	5.8	< 1	4.7	< 1	< 3	3.4	< 20
	12/04/02	1.7	< 1	6.3	< 1	< 3	2.2	< 20
	09/10/02	< 5.0	< 5.0	< 10	< 20	< 15	< 50	**88** [4]
600GW102	12/02/03	< 5	< 1	< 10	< 1	< 3	< 20	< 20
	08/13/03	< 5	< 1	< 10	< 1	< 3	< 20	< 20
	06/09/03	< 5	< 1	< 10	< 1	< 3	< 20	< 20
	03/11/03	3.4	< 1	2	< 1	< 3	4.3	< 20
	12/04/02	3	< 1	1.9	< 1	< 3	4.3	< 20
	09/10/02	6.2	< 5.0	< 10	< 20	< 15	< 50	**140** [4]
600GW103	12/02/03	< 5	< 1	< 10	< 1	< 3	< 20	< 20
	08/13/03	7.2	< 1	< 10	< 1	< 3	< 20	< 20
DUP0813033A	08/13/03	9.7	< 1	< 10	< 1	< 3	< 20	< 20
	06/09/03	7.6	< 1	< 10	< 1	< 3	< 20	< 20
	03/11/03	4	< 1	1.2	< 1	< 3	2.9	< 20
	12/04/02	4.2	< 1	3.1	< 1	< 3	3.3	< 20
	09/10/02	6.7	< 5.0	< 10	< 20	< 15	< 50	**120** [4]
600GW104	12/02/03	< 5	< 1	< 10	< 1	< 3	< 20	< 20
	12/02/03	< 5	< 1	< 10	< 1	< 3	< 20	< 20
	08/18/03	< 5	< 1	< 10	< 1	< 3	< 20	< 20 UJ
	06/05/03	< 5	< 1	< 10	1.2	< 3	< 20	< 20
	03/11/03	< 1	< 1	< 1	1	< 3	**7.3**	< 20
DUP0311032A	03/11/03	< 1	< 1	1.8	1.1	< 3	7.1	< 20
600GW104CL	03/11/03	6.5	< 1	< 5	< 5	< 3	**8.8**	14
	12/04/02	1.3	< 1	1.4	< 1	< 3	5.1	< 20
	09/10/02	< 5.0	< 5.0	< 10	< 20	< 15	< 50	55
DUP0910021A	09/10/02	< 5.0	< 5.0	< 10	< 20	< 15	< 50	**79** [4]
600GW105	12/02/03	< 5	< 1	< 10	1.1	< 3	< 20	< 20
	08/13/03	< 5	< 1	< 10	1.4	< 3	< 20	< 20
	06/05/03	< 5	< 1	< 10	1.1	< 3	< 20	< 20
DUP0605033A	06/05/03	< 5	< 1	< 10	1.6	< 3	< 20	< 20
	03/12/03	< 1	< 1	< 1	1.9	< 3	**11**	< 20
	12/04/02	< 1	< 1	1.5	**4.2**	< 3	**9.1**	< 20
	09/11/02	< 5	< 5	< 10	< 20	< 15	< 50	**130** [4]

Table C-10
Metals Results in Groundwater
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	Sample Date	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc
	Analytical Method [1]	SW6020	SW6020	SW6020	SW6020	SW6020	SW6020	SW6020
		(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Cleanup Levels [2]		**10**	**5**	**50**	**2.9**	**5.6**	**7.1**	**58**
600GW106	12/02/03	< 5	< 1	< 10	< 1	< 3	< 20	< 20
	08/13/03	< 5	< 1	< 10	1.1	< 3	< 20	< 20
	06/05/03	< 5	< 1	< 10	< 1	< 3	< 20	< 20
	03/12/03	< 1	< 1	1.1	< 1	< 3	4.6	< 20
	12/04/02	< 1	< 1	1.6	1.1	< 3	4.4	< 20
	09/11/02	< 5	< 5	< 10	< 20	< 15	< 50	**260** [4]
600GW107	12/03/03	< 5	< 1	< 10	< 1	< 3	< 20	< 20
	08/13/03	7.1	< 1	< 10	1.2	< 3	< 20	< 20
	06/06/03	< 5	< 1	< 10	2.3	< 3	< 20	< 20
	03/11/03	2.4	< 1	1	< 1	< 3	3.8	< 20
600GW108	12/03/03	< 5	< 1	< 10	< 1	< 3	< 20	< 20
	08/13/03	< 5	< 1	< 10	1.3	< 3	< 20	< 20
	06/05/03	< 5	< 1	< 10	1.1	< 3	< 20	< 20
	03/12/03	< 1	< 1	< 1	< 1	< 3	4.2	< 20
	12/09/02	< 1	< 1	1.2	< 1	< 3	5.4	< 20
DUP1209022C	12/09/02	< 1	< 1	< 1	< 1	< 3	4.4	< 20
600GW108CL	12/09/02	< 2 U	< 1	< 5	< 5	< 3	< 5	< 10
	09/10/02	< 5.0	< 5.0	< 10	< 20	< 15	< 50	**140** [4]
600GW109	12/03/03	< 5	< 1	< 10	< 1	< 3	< 20	< 20
	08/13/03	< 5	< 1	< 10	< 1	< 3	< 20	< 20
	06/05/03	< 5	< 1	< 10	< 1	< 3	< 20	< 20
	03/11/03	< 1	< 1	2.9	< 1	< 3	3.5	< 20
	12/04/02	< 1	< 1	1.7	< 1	< 3	2.2	< 20
	09/10/02	< 5.0	< 5.0	< 10	< 20	< 15	< 50	**110** [4]
610GW101	12/02/03	< 5	< 1	< 10	< 1	< 3	< 20	< 20
	08/14/03	< 5	< 1	< 10	< 1	< 3	< 20	< 20 UJ
DUP0814033A	08/14/03	< 5	< 1	< 10	< 1	< 3	< 20	< 20 UJ
610GW101CL	08/14/03	7.3	< 1	< 10	< 10	< 3	< 10	< 20
	06/04/03	< 5	< 1	< 10	< 1	< 3	< 20	< 20
DUP0604033B	06/04/03	< 5	< 1	< 10	< 1	< 3	< 20	< 20
610GW101CL	06/04/03	4.6	< 1	< 5	< 5	< 3	< 5	< 20
	03/11/03	1.1	< 1	2.9	< 1	< 3	1.5	< 20
	12/03/02	1.4	< 1	1.8 J	< 1	< 3	1.1	< 20
610GW102	12/02/03	9.9	< 1	< 10	< 1	< 3	< 20	< 20
	08/18/03	**13**	< 1	< 10	< 1	< 3	< 20	< 20 UJ
	06/05/03	**11**	< 1	< 10	< 1	< 3	< 20	< 20
	03/11/03	8.6	< 1	2.7	1	< 3	6.1	< 20
DUP0311033A	03/11/03	8.9	< 1	1.1	< 1	< 3	5.8	< 20
	12/03/02	**11**	< 1	2.8 J	< 1	< 3	5.2	< 20

Table C-10
Metals Results in Groundwater
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	Sample Date	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc
	Analytical Method [1]	SW6020	SW6020	SW6020	SW6020	SW6020	SW6020	SW6020
		(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Cleanup Levels [2]		**10**	**5**	**50**	**2.9**	**5.6**	**7.1**	**58**
610GW103	12/03/03	7.5	< 1	< 10	< 1	< 3	< 20	< 20
DUP1203033A	12/03/03	7.2	< 1	< 10	< 1	< 3	< 20	< 20
610GW103CL	12/03/03	**13**	< 1	< 10	< 10	< 3	< 10	< 20
	08/18/03	7.4	< 1	< 10	< 1	< 3	< 20	< 20 UJ
DUP0818033A	08/18/03	7.1	< 1	< 10	< 1	< 3	< 20	< 20 UJ
	06/05/03	7.3	< 1	< 10	< 1	< 3	< 20	< 20
	03/11/03	6.3	< 1	2.2	< 1	< 3	**7.7**	< 20
	12/03/02	4.7	< 1	3.3 J	< 1	< 3	1.9	< 20
DUP1203022A	12/03/02	4.6	< 1	3.1 J	< 1	< 3	2	< 20
610SP01	12/9/2003[3]	6.6	< 1	21	2.4	**15**	**65**	**110 J+**
DUP1209031A	12/9/2003[3]	< 5	< 1	23	< 1	**9.7**	**81**	**110 J+**
610SP01CL	12/9/2003[3]	**220**	5.5	**1,000**	**320**	**300**	**1,400**	**920**
	8/21/2003[3]	**23**	1.2	**87**	**18**	**190**	**330**	**300**
	06/11/03	**16**	< 1	< 10	1.1	< 3	< 20	< 20
	03/20/03	9.9	< 1	1.2	< 1	< 3	3.6	< 10
	12/11/02	**19**	< 1	3.2	1.4	< 3	3.3	< 20
610SP02	12/9/2003[3]	< 5	< 1	12	2.3	**16**	**25**	**74 J+**
	8/21/2003[3]	< 5	< 1	< 10	< 1	**6.4**	< 20	< 20
	06/11/03	9	< 1	< 10	< 1	< 3	< 20	< 20
	03/20/03	**11**	< 1	1.2	1.1	< 3	3.9	< 10
	12/11/02	**11**	< 1	3	1.3	< 3	3.3	< 20

Notes

[1] The identified analytical method(s) are for analyses performed beginning in the Second Quarter 2001. The analytical methods used during previous quarters are identified in their respective quarterly report.

[2] Cleanup Levels are found in Table 4.

[3] Samples were not filtered and results represent total metals.

[4] Zinc exceedances due to filter type used by Blaine Tech in September 2002. Refer to Section 2.4.3.4.

BOLD indicates a concentration which exceeds the cleanup level.
"CL" suffix denotes a quality control duplicate sample sent to the quality control laboratory.
DUP prefix indicates a blind duplicate sample
NA - not analyzed
µg/L - micrograms per liter
J - Data validation qualifier, "The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample."
UJ - Data validation qualifier, "The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample."

Table C-11
Summary of PCB Results in Groundwater
Commissary/PX Study Area
Presidio of San Francisco, California

Sample Name	Sample Date	PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254
	Analytical Method	SW8082	SW8082	SW8082	SW8082	SW8082	SW8082
		(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Screening Levels [1]		**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**
626GG01	07/29/02	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
628GG09	08/02/02	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
DUP080202B	08/02/02	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3

Notes
[1] Screening Levels were obtained from Table 1a of the *Draft Site Investigation Report Commissary/Post Exchange Study Area Presidio of San Francisco, California* (Treadwell& Rollo, 2003c).
DUP prefix indicates a blind duplicate sample
PCB - Polychlorinated biphenyl
µg/L - micrograms per liter

APPENDIX D
Cost Estimates and Assumptions for Corrective Action Alternatives

APPENDIX D

COST ESTIMATES AND ASSUMPTIONS FOR CORRECTIVE ACTION ALTERNATIVES COMMISSARY/PX CORRECTIVE ACTION PLAN

Corrective action costs for the alternatives are presented in Tables D-1 through D-9. These estimates have an accuracy level of +50 percent to –30 percent in accordance with U.S. Environmental Protection Agency (EPA) guidance (EPA, 1988). For all alternatives, the costs are presented in present value. The level of accuracy for these estimates is appropriate for comparing corrective action alternatives and not necessarily accurate prediction of incurred cost. The cost estimate basis is a conceptual design rather than a detailed design. Notes and assumptions used for estimating the costs are on each table. Table D-10 presents unit rates used in the cost estimates. Tables D-11 and D-12 present material surface area and volume estimates, respectively. These cost estimates include direct costs, indirect costs, and contingency. Direct costs include the labor, equipment, and materials required to complete the project or task. Indirect costs include general conditions (i.e., mobilization, site supervision, etc.), overhead and profit, project management, and escalation factors for the time between contract award and project start date. Estimated legal costs, administrative costs, contingencies, and mobilization costs are following the *Presidio Trust Revised Feasibility Study Main Installations Sites* (EKI, 2003).

Table D-1
All Soil Remedial Units-Alternative 1:
Estimated Costs Associated with No Further Action
Commissary/PX Study Area
Presidio of San Francisco, California

Capital Costs					
	Estimated Costs				
Task Description	**Unit**	**Quantity**	**Unit Cost**	**Subtotal**	**Total**
Abandon Existing Groundwater Monitoring Wells					
Abandon 2-inch PVC monitoring wells	ea	12	$ 3,300	$ 39,600	
Dispose of well abandonment residuals	ea	12	$ 200	$ 2,400	
					$ 42,000
Design and Construction Management Services					
Engineering/Project Management/Office Support	ls	1	$ 1,000	$ 1,000	
Construction Observation and Coordination	day	3	$ 1,000	$ 3,000	
Prepare well abandonment letter report	ls	1	$ 5,000	$ 5,000	
					$ 9,000
Subtotal Estimated Costs (w/ contractor overhead and profit):					$ 51,000
Legal and Administrative Costs (assumed to be 5 percent of subtotal estimated costs w/ contractor overhead and profit):					$ 3,000
Subtotal Estimated Costs (w/ legal and administrative costs):					$ 54,000
Contingencies (assumed to be 20 percent of subtotal estimated costs w/ legal and administrative costs):					$ 11,000
Total Preliminary Estimated Capital Costs of Remedial Alternative:					**$ 65,000**

Notes
1. Totals may not sum exactly because of rounding.
2. Derivation of unit rates is presented in Table D-10.

Table D-2
All Soil Remedial Units - Alternative 2:
Estimated Costs for Capping Soil with Land Use Controls and Groundwater Monitoring
Commissary/PX Study Area
Presidio of San Francisco, California

Capital Costs					
	Estimated Costs				
Task Description	**Unit**	**Quantity**	**Unit Cost**	**Subtotal**	**Total**
General Site Preparation					
Mobilize contractor equipment and supplies to site	ls	1	$ 20,000	$ 20,000	
Erect and maintain perimeter temporary fence	ft	1,000	$ 1.09	$ 1,090	
Remove 5' to 6' trees and save for replanting	ea	20	$ 48	$ 960	
Pre-excavation, post-excavation and confirmation sample survey	acre	20	$ 1,500	$ 30,000	
Decontamination area for personnel and equipment	ls	1	$ 1,500	$ 1,500	
Provide Personnel Protective Equipment (PPE)	ls	1	$ 2,000	$ 2,000	
					$ 55,550
Construct Cap					
Mobilize contractor equipment and supplies to site	ls	1	$ 5,000	$ 5,000	
Repair/Upgrade Permeable Cover (Asphalt Area)					
Asphalt Sealing	sy	3,918	$ 1.25	$ 4,898	
Excavate Impacted Soil (12 inches); small equipment	cy	604	$ 8.75	$ 5,283	
Collect soil profile samples for disposal	cy	2	$ 26	$ 52	
Disposal Characterization					
Six metals (EPA Method 6010B)	ea	2	$ 100	$ 200	
(EPA 8015M)	ea	2	$ 105	$ 210	
Dispose of non-hazardous soil at Class II facility	ton	966	$ 35	$ 33,809	
Compact soil subgrade; small equipment	sf	16,301	$ 0.25	$ 4,075	
Furnish and install geosynthentic clay liner (GCL)	sf	16,301	$ 0.75	$ 12,226	
Import and Place Clean Topsoil (12 inches)	cy	604	$ 30	$ 18,112	
Restore Parking Curbs	ft	555	$ 26	$ 14,430	
Restore landscaping compatible with GCL liner	ls	1	$ 10,000	$ 10,000	
Vegetate Imported Cover (grass)	acre	0.37	$ 30,000	$ 11,203	
					$ 119,499
Land Use Controls					
Prepare Site-Specific Addendum to the Land Use Control Master Reference Report (Area B)	ls	1	$ 5,000	$ 5,000	
Implement Land Use Controls for Area A RUs	ls	1	$ 5,000	$ 5,000	
Add Site-Specific Land Use Controls to Trust GIS System	ls	1	$ 500	$ 500	
					$ 10,500
Design and Construction Management Services					
Engineering					
Perform general planning activities	ls	1	$ 20,000	$ 20,000	
Prepare remedial design (plans and specifications)	ls	1	$ 75,000	$ 75,000	
Bid, award, and negotiate construction contract	ls	1	$ 11,500	$ 11,500	
Construction observation					
Provide resident engineer	wk	2.5	$ 5,000	$ 12,500	
Provide office support	wk	2.5	$ 2,000	$ 5,000	
Provide vehicles and equipment	wk	2.5	$ 1,300	$ 3,250	
Perform air monitoring	wk	2.5	$ 1,000	$ 2,500	
Prepare Remediation Completion Report	ls	1	$ 50,000	$ 50,000	
					$ 179,750
Engineering Project Management					
9% of Design and Construction Management Services	1s	9%			$ 16,178
Subtotal Estimated Costs (w/ contractor overhead and profit):					$ 381,000
Legal and Administrative Costs (assumed to be 5 percent of subtotal estimated costs w/ contractor overhead and profit):					$ 19,000
Subtotal Estimated Costs (w/ legal and administrative costs):					$ 400,000
Contingencies (assumed to be 20 percent of subtotal estimated costs w/ legal and administrative costs):					$ 80,000
Total Preliminary Estimated Capital Costs of Remedial Alternative:					**$ 480,000**

Table D-2
All Soil Remedial Units - Alternative 2:
Estimated Costs for Capping Soil with Land Use Controls and Groundwater Monitoring
Commissary/PX Study Area
Presidio of San Francisco, California

Annual Costs					
	Estimated Costs				
Task Description	**Unit**	**Quantity**	**Unit Cost**	**Subtotal**	**Total**
Conduct Groundwater Monitoring					
Sample wells (12 well, 2 seep, and 2 duplicate samples per quarter)	ea	64	$ 800	$ 51,200	
Dispose of groundwater sampling residuals	ls	1	$ 800	$ 800	
Analyze groundwater samples from wells					
General Water Quality	ea	64	$ 230	$ 14,720	
6 Metals (EPA Method 6010)	ea	64	$ 100	$ 6,400	
Volatile Organic Compounds (EPA Method 8260B)	ea	64	$ 145	$ 9,280	
Polycyclic Aromatic Hydrocarbons (EPA Method 8270)	ea	64	$ 200	$ 12,800	
Total Petroleum Hydrocarbons as Gasoline, as Diesel Fuel, and as Motor Oil (EPA 8015M + EPA 3630A, silica gel cleanup)	ea	64	$ 135	$ 8,640	
Perform independent data validation	ea	64	$ 20	$ 1,280	
Input analytical results into Presidio database	ea	64	$ 15	$ 960	
Prepare quarterly monitoring reports	ea	4	$ 5,000	$ 20,000	
					$ 126,080
Project Management/Administration					
Annual administrative cost of Land Use Controls (Area B)	ls	1	$ 1,000	$ 1,000	
Coordinate with NPS for Area A site (TPHg Source Area Only)	ls	1	$ 1,000	$ 1,000	
Annual administrative cost of Land Use Controls (Area A)	ls	1	$ 1,000	$ 1,000	
Annualized cost of Five-Year Review (6 occurrences)	ls	1	$ 5,000	$ 5,000	
					$ 8,000
Subtotal Estimated Costs (w/ contractor overhead and profit):					$ 134,000
Legal and Administrative Costs (assumed to be 5 percent of subtotal estimated costs w/ contractor overhead and profit):					$ 7,000
Subtotal Estimated Costs (w/ legal and administrative costs):					$ 141,000
Contingencies (assumed to be 20 percent of subtotal estimated costs w/ legal and administrative costs):					$ 28,000
Total Preliminary Estimated Annual Costs of Remedial Alternative:					**$ 169,000**

Notes and Assumptions
1. Totals may not sum exactly because of rounding.
2. Groundwater and surface water monitoring will include 12 monitoring wells and 2 seeps.
3. Field effort for capping is assumed to be 2.5 weeks in duration.
4. Area of grass is estimated from Figures 16 and 17; areas and volumes are presented in Tables D-11 and D-12.
5. Landscaping options for 12-inch vegetative layer overlying geosynthetic clay liner (GCL) are limited. Vegetation other than grasses may require special design measures (to be determined).
6. Derivation of unit rates is presented in Table D-10.

Table D-3
Less Accessible Soil Remedial Units-
Alternative 3:
Estimated Costs for In Situ Soil Remediation - Oxygen Release Product Injection
Commissary/PX Study Area
Presidio of San Francisco, California

Capital Costs					
	Estimated Costs				
Task Description	**Unit**	**Quantity**	**Unit Cost**	**Subtotal**	**Total**
General Site Preparation					
Mobilize contractor equipment and supplies to site	ls	1	$20,000	$ 20,000	
Pre-excavation, post-excavation, and confirmation sample survey	ls	1	$ 4,500	$ 4,500	
Provide Personnel Protective Equipment (PPE)	ls	1	$ 2,000	$ 2,000	
Decontamination area for personnel and equipment	1s	1	$ 1,500	$ 1,500	
					$ 28,000
ORC® application in 2-inch diameter DPT borings					
Concrete cutting (12" core up to 6" thick)	ea	40	$ 90	$ 3,600	
Contractor (5-foot DPT boring for ORC® application)	ea	5	$ 500	$ 2,500	
Contractor (10-foot DPT borings for ORC® application)	ea	35	$ 450	$ 15,750	
High pressure grout pump	day	10	$ 200	$ 2,000	
ORC® materials (2.5 lbs/cy applied to 1380 cy)	lb	3,450	$ 10	$ 34,500	
					$ 58,350
Implement Land Use Controls					
Prepare Site-Specific Addendum to the Land Use Control Master Reference Report	ls	1	$ 5,000	$ 5,000	
Add Site-Specific Land Use Controls to Trust GIS System	ls	1	$ 500	$ 500	
Annual administrative cost of Interim Land Use Controls	yrs	5	$ 1,000	$ 5,000	
					$ 10,500
Design and Construction Management Services					
Engineering					
Perform general planning activities	ls	1	$20,000	$ 20,000	
Prepare Remedial Design (workplan and figures)	ls	1	$25,000	$ 25,000	
Construction Observation					
Provide resident engineer	wk	2.5	$ 5,000	$ 12,500	
Provide office support	wk	2.5	$ 2,000	$ 5,000	
Perform air monitoring	wk	2.5	$ 1,000	$ 2,500	
Collect soil confirmation samples with DPT	ea	6	$ 865	$ 5,190	
Total Petroleum Hydrocarbons as Gasoline (EPA 8015M + EPA 3630A, silica gel cleanup)	ea	12	$ 80	$ 960	
Total Petroleum Hydrocarbons as Diesel Fuel (EPA 8015M + EPA 3630A, silica gel cleanup)	ea	12	$ 85	$ 1,020	
Total Petroleum Hydrocarbons as Fuel Oil (EPA 8015M + EPA 3630A, silica gel cleanup)	ea	12	$ 85	$ 1,020	
Polycyclic aromatic hydrocarbons (EPA Method 8270)	ea	12	$ 200	$ 2,400	
Perform independent data validation (Level III plus 10% Level IV)	ea	12	$ 20	$ 240	
Input analytical results into Presidio database	ea	12	$ 15	$ 180	
Prepare Remediation Completion Report	1s	1	$50,000	$ 50,000	
					$ 126,010
Engineering Project Management					
9% of Design and Construction Management Services	1s	9%			$ 11,341
Subtotal Estimated Costs (w/ contractor overhead and profit):					$ 234,000
Legal and Administrative Costs (assumed to be 5 percent of subtotal estimated costs w/ contractor overhead and profit):					$ 12,000
Subtotal Estimated Costs (w/ legal and administrative costs):					$ 246,000
Contingencies (assumed to be 20 percent of subtotal estimated costs w/ legal and administrative costs):					$ 49,000
Total Preliminary Estimated Capital Costs of Remedial Alternative:					**$ 295,000**

Table D-3
Less Accessible Soil Remedial Units-
Alternative 3:
Estimated Costs for In Situ Soil Remediation - Oxygen Release Product Injection
Commissary/PX Study Area
Presidio of San Francisco, California

Annual Costs					
	Estimated Costs				
Task Description	**Unit**	**Quantity**	**Unit Cost**	**Subtotal**	**Total**
Project Management/Administration					
Annual administrative cost of Land Use Controls	ls	1	$ 1,000	$ 1,000	
Annualized cost of Five-Year Review (6 occurrences)	ls	1	$ 5,000	$ 5,000	
					$ 6,000
Subtotal Estimated Costs (w/ contractor overhead and profit):					$ 6,000
Legal and Administrative Costs (assumed to be 5 percent of subtotal estimated costs w/ contractor overhead and profit):					$ -
Subtotal Estimated Costs (w/ legal and administrative costs):					$ 6,000
Contingencies (assumed to be 20 percent of subtotal estimated costs w/ legal and administrative costs):					$ 1,000
Total Preliminary Estimated Annual Costs of Remedial Alternative:					**$ 7,000**

Notes and Assumptions

1.Totals may not sum exactly because of rounding.

2. Field effort for ORC application is assumed to be 10 days in duration.

3. Total number of ORC application points was calculated using 10-foot linear spacing. Assumed drilling 5 borings to 5 feet and 35 borings to 10 feet.

4. Estimated cost of ORC is $10/pound. Assumed using 2.5 pounds of ORC per cubic yard of soil. By comparison, at Building 637, 2,700 pounds of ORC were injected over an area of approximately 19,500 square feet, between 3 and 7 feet bgs (EKI, 2004), for an application rate of 0.9 pounds of ORC per cubic yard of soil. The relatively lower rate for Building 637 may be attributable to ORC application over a large, contiguous area from which hot spots had been previously excavated.

5. In situ remediation is assumed to be complete in six months after ORC application.

6. Drilling costs quoted from Gregg Drilling and Testing, Inc. ORC costs quoted from Regensis.

7. Post-remediation confirmation samples will be collected at SI exceedance locations. Samples will be analyzed for contaminants of concern exceeding cleanup levels.

8. Surface area of soil RUs and volume of shallow (3-foot depth) and deep (10-foot depth) cleanup level exceedance areas were estimated from Figures 16 and 17.

9. Derivation of unit rates is presented in Table D-10.

Table D-4
Less Accessible Soil Remedial Units - Alternative 3:
Estimated Costs for In Situ Soil Remediation - Bioventing and Biosparging
Commissary/PX Study Area
Presidio of San Francisco, California

Capital Costs					
	Estimated Costs				
Task Description	**Unit**	**Quantity**	**Unit Cost**	**Subtotal**	**Total**
General Site Preparation					
Mobilize contractor equipment and supplies to site	ls	1	$ 20,000	$ 20,000	
Pre-excavation, post-excavation, and confirmation sample survey	ls	1	$ 4,500	$ 4,500	
Provide Personnel Protective Equipment (PPE)	ls	1	$ 2,000	$ 2,000	
Decontamination area for personnel and equipment	1s	1	$ 1,500	$ 1,500	
					$ 28,000
Install Injection (4)/Venting Wells (3) in 626/628 Areas					
Concrete cutting (12" core up to 6" thick)	ea	7	$ 90	$ 630	
Contractor (7 31-ft-long 2-in inclined wells, to 9-ft (4) and 4-ft (3) depths)	ft	217	$ 75	$ 16,275	
					$ 16,905
Install Injection (1)/Venting Wells (1) in 619 Area					
Concrete cutting (12" core up to 6" thick)	ea	4	$ 90	$ 360	
Contractor (2 550-ft long 2-in horizontal wells, to 9-ft (1) and 3-ft (1) depths)	ft	1,040	$ 120	$ 124,800	
					$ 125,160
Surface Installation (piping in trenches, manifold, blowers, controls)					
Contractor - Trenching (1-in piping,1-ft deep)	ea	550	$ 50	$ 27,500	
Contractor (skid-mounted blowers, controls, noise shed)	ls	1	$ 30,000	$ 30,000	
					$ 57,500
Implement Land Use Controls					
Prepare Site-Specific Addendum to the Land Use Control Master Reference Report	ls	1	$ 5,000	$ 5,000	
Add Site-Specific Land Use Controls to Trust GIS System	ls	1	$ 500	$ 500	
Annual administrative cost of Interim Land Use Controls	yrs	5	$ 1,000	$ 5,000	
					$ 10,500
Design and Construction Management Services					
Engineering					
Perform general planning activities	ls	1	$ 20,000	$ 20,000	
Prepare Remedial Design (workplan and figures)	ls	1	$ 25,000	$ 25,000	
Construction Observation					
Provide resident engineer	wk	2	$ 5,000	$ 10,000	
Provide office support	wk	2	$ 2,000	$ 4,000	
Installation Monitoring					
Field monitoring for O2, CO2	dy	10	$ 100	$ 1,000	
Field Monitoring for VOCs	dy	5	$ 100	$ 500	
Performance Monitoring (Year 1)					
Field monitoring for O2, CO2	dy	26	$ 500	$ 13,000	
Performance Monitoring (Years 2 thru 5)					
Field monitoring for O2, CO2	dy	48	$ 500	$ 24,000	
Collect soil confirmation samples with DPT	ea	6	$ 865	$ 5,190	
Total Petroleum Hydrocarbons as Gasoline (EPA 8015M + EPA 3630A, silica gel cleanup)	ea	12	$ 80	$ 960	
Total Petroleum Hydrocarbons as Diesel Fuel (EPA 8015M + EPA 3630A, silica gel cleanup)	ea	12	$ 85	$ 1,020	
Total Petroleum Hydrocarbons as Fuel Oil (EPA 8015M + EPA 3630A, silica gel cleanup)	ea	12	$ 85	$ 1,020	
Polycyclic aromatic hydrocarbons (EPA Method 8270)	ea	12	$ 200	$ 2,400	
Perform independent data validation (Level III plus 10% Level IV)	ea	12	$ 20	$ 240	
Input analytical results into Presidio database	ea	12	$ 15	$ 180	
Prepare Start Up Report	1s	1	$ 50,000	$ 50,000	
					$ 158,510

Table D-4
Less Accessible Soil Remedial Units - Alternative 3:
Estimated Costs for In Situ Soil Remediation - Bioventing and Biosparging
Commissary/PX Study Area
Presidio of San Francisco, California

Capital Costs					
	Estimated Costs				
Task Description	**Unit**	**Quantity**	**Unit Cost**	**Subtotal**	**Total**
Engineering Project Management					
9% of Design and Construction Management Services	1s	9%			$ 14,266
Subtotal Estimated Costs (w/ contractor overhead and profit):					$ 411,000
Legal and Administrative Costs (assumed to be 5 percent of subtotal estimated costs w/ contractor overhead and profit):					$ 21,000
Subtotal Estimated Costs (w/ legal and administrative costs):					$ 432,000
Contingencies (assumed to be 20 percent of subtotal estimated costs w/ legal and administrative costs):					$ 86,000
Total Preliminary Estimated Capital Costs of Remedial Alternative:					**$ 518,000**

Annual Costs					
	Estimated Costs				
Task Description	**Unit**	**Quantity**	**Unit Cost**	**Subtotal**	**Total**[a]
Project Management/Administration					
Annual administrative cost of Land Use Controls	ls	1	$ 1,000	$ 1,000	
Annualized cost of Five-Year Review (6 occurrences)	ls	1	$ 5,000	$ 5,000	
					$ 6,000
Subtotal Estimated Costs (w/ contractor overhead and profit):					$ 6,000
Legal and Administrative Costs (assumed to be 5 percent of subtotal estimated costs w/ contractor overhead and profit):					$ -
Subtotal Estimated Costs (w/ legal and administrative costs):					$ 6,000
Contingencies (assumed to be 20 percent of subtotal estimated costs w/ legal and administrative costs):					$ 1,000
Total Preliminary Estimated Annual Costs of Remedial Alternative:					**$ 7,000**

Notes and Assumptions
1.Totals may not sum exactly because of rounding.
2. Field effort for bio-sparging application is assumed to be 10 days in duration.
3. Cost estimate is based upon the following conceptual design:
Building 626 - Three 2-inch inclined injection wells, 31 feet long, end-cap depth of 9 feet bgs; screen at 29 to 31 feet; angle about 6 degrees from horizontal (84 degrees from vertical). Two 2-inch inclined venting wells, 31 feet long, end-cap depth of 3 feet bgs; screen at 16 to 31 feet; angle about 5 degrees from horizontal.
Building 628 - One 2-inch inclined injection well, 31 feet long, end-cap depth of 9 feet bgs; screen at 29 to 31 feet; angle about 6 degrees from horizontal (84 degrees from vertical). One 2-inch inclined venting well, 31 feet long, end-cap depth of 3 feet bgs; screen at 16 to 31 feet; angle about 5 degrees from horizontal.
Building 619 - Two 2-inch horizontal wells, one injection at 9 ft bgs and one extraction at 3 ft bgs, installed by drilling completely under building from one site (Doyle Drive side) to the other (Mason Street side); total length approx. 520 feet; screened interval from approx. 120 ft to 210 ft (90 ft screen length) along horizontal boring.
All three areas - Manifolded together for air injection and air extraction; approx. 550 feet of piping in subsurface trench, 2 low volume blowers (1 to 5 scfm each well), controls, power. Operated by injecting air at 1 to 2 scfm into injection wells, extracting at 4 to 5 scfm from venting wells; Inlet and exhaust air stream monitored for O_2, CO_2, and VOCs (initially); Monitoring daily first week, every other day second and third week.
4. Derivation of unit rates is presented in Table D-10.

Table D-5
Less Accessible Soil Remedial Units-
Alternative 3:
Estimated Costs for In Situ Soil Remediation - Ozone Sparging
Commissary/PX Study Area
Presidio of San Francisco, California

Capital Costs					
	Estimated Costs				
Task Description	**Unit**	**Quantity**	**Unit Cost**	**Subtotal**	**Total**
General Site Preparation					
Mobilize contractor equipment and supplies to site	ls	1	$ 20,000	$ 20,000	
Pre-excavation, post-excavation, and confirmation sample survey	ls	1	$ 4,500	$ 4,500	
Provide Personnel Protective Equipment (PPE)	ls	1	$ 2,000	$ 2,000	
Decontamination area for personnel and equipment	1s	1	$ 1,500	$ 1,500	
					$ 28,000
Ozone Injection					
Ozone sparge system					
System start-up (subcontractor + site review)	ls	1	$ 11,500	$ 11,500	
Concrete cutting (12" core up to 6" thick)	ea	6	$ 95	$ 570	
Contractor (drill with HSA six 15-foot borings for sparge points)	ea	6	$ 340	$ 2,040	
Ozone sparge remedial system	ls	1	$ 200,400	$ 200,400	
System O&M (4hr/week)	wk	22	$ 360	$ 7,920	
					$ 222,430
Implement Land Use Controls					
Prepare Site-Specific Addendum to the Land Use Control Master Reference Report	ls	1	$ 5,000	$ 5,000	
Add Site-Specific Land Use Controls to Trust GIS System	ls	1	$ 500	$ 500	
Annual administrative cost of Interim Land Use Controls	yrs	5	$ 1,000	$ 5,000	
					$ 10,500
Design and Construction Management Services					
Engineering					
Perform general planning activities	ls	1	$ 20,000	$ 20,000	
Prepare Remedial Design (workplan and figures)	ls	1	$ 25,000	$ 25,000	
Construction Observation					
Provide resident engineer	wk	1	$ 5,000	$ 5,000	
Provide office support	wk	1	$ 1,000	$ 1,000	
Perform air monitoring	wk	2.5	$ 1,000	$ 2,500	
Collect soil confirmation samples with 2 inch diameter DPT	ea	6	$ 865	$ 5,190	
Total Petroleum Hydrocarbons as Gasoline	ea	12	$ 80	$ 960	
Total Petroleum Hydrocarbons as Diesel Fuel	ea	12	$ 85	$ 1,020	
Total Petroleum Hydrocarbons as Fuel Oil (EPA 8015M + EPA 3630A, silica gel cleanup)	ea	12	$ 85	$ 1,020	
Polycyclic aromatic hydrocarbons (EPA Method 8270)	ea	12	$ 200	$ 2,400	
Perform independent data validation (Level III plus 10% Level IV)	ea	12	$ 20	$ 240	
Input analytical results into Presidio database	ea	12	$ 15	$ 180	
Prepare Remediation Completion Report	1s	1	$ 50,000	$ 50,000	
					$ 114,510
Engineering Project Management					
9% of Design and Construction Management Services	1s	9%			$ 10,306
Subtotal Estimated Costs (w/ contractor overhead and profit):					$ 386,000
Legal and Administrative Costs (assumed to be 5 percent of subtotal estimated costs w/ contractor overhead and profit):					$ 19,000
Subtotal Estimated Costs (w/ legal and administrative costs):					$ 405,000
Contingencies (assumed to be 20 percent of subtotal estimated costs w/ legal and administrative costs):					$ 81,000
Total Preliminary Estimated Capital Costs of Remedial Alternative:					**$ 486,000**

Table D-5
Less Accessible Soil Remedial Units-
Alternative 3:
Estimated Costs for In Situ Soil Remediation - Ozone Sparging
Commissary/PX Study Area
Presidio of San Francisco, California

Annual Costs					
	Estimated Costs				
Task Description	**Unit**	**Quantity**	**Unit Cost**	**Subtotal**	**Total**
Project Management/Administration					
Annual administrative cost of Land Use Controls	ls	1	$ 1,000	$ 1,000	
Annualized cost of Five-Year Review (6 occurrences)	ls	1	$ 5,000	$ 5,000	
					$ 6,000
Subtotal Estimated Costs (w/ contractor overhead and profit):					$ 6,000
Legal and Administrative Costs (assumed to be 5 percent of subtotal estimated costs w/ contractor overhead and profit):					$ -
Subtotal Estimated Costs (w/ legal and administrative costs):					$ 6,000
Contingencies (assumed to be 20 percent of subtotal estimated costs w/ legal and administrative costs):					$ 1,000
Total Preliminary Estimated Annual Costs of Remedial Alternative:					**$ 7,000**

Notes and Assumptions
1. Totals may not sum exactly because of rounding.
2 Field effort for installing ozone sparge points and remedial system assumed to be one week in duration. This estimate includes having a remedial system supplier on-site to set-up and start system, drilling 6 borings with a hollow-stem auger and engineering oversight. The borings will be converted to ozone sparge points.
3. Assumed using one ozone sparge remedial system per soil remedial unit. Estimated cost includes all equipment required to build the ozone sparge system.
4. Assumed each ozone sparge point has an estimated 40-foot diameter zone of influence. Targeted sparge point placement to overlap 20% to 30%.
5. In situ remediation is assumed to be complete in six months after ozone sparge system is operational.
6. Drilling costs quoted from Gregg Drilling and Testing, Inc. Cost of ozone injection system is quoted from KVA.
7. Post-remediation confirmation samples will be collected at SI exceedance locations. Samples will be collected six months after system start-up and will be analyzed for contaminants of concern exceeding cleanup levels.
8. Estimated cost to collect soil confirmation samples with DPT includes driller mobilization, concrete coring, DPT rig, and field engineer. Field effort for soil confirmation sample collection is assumed to be 1 day. Costs include $375 mobilization, $450 concrete coring and $2,600 for DPT rig.
9. Surface area of soil RUs and volume of shallow (3-foot depth) and deep (10-foot depth) cleanup level exceedance areas were estimated from Figures 16 and 17.
10. Derivation of unit rates is presented in Table D-10.

Table D-6
Less Accessible Soil Remedial Units - Alternative 3:
Estimated Costs for In Situ Soil Remediation - Sodium Persulfate Injection
Commissary/PX Study Area
Presidio of San Francisco, California

Capital Costs					
	Estimated Costs				
Task Description	**Unit**	**Quantity**	**Unit Cost**	**Subtotal**	**Total**
General Site Preparation					
Mobilize contractor equipment and supplies to site	ls	1	$20,000	$ 20,000	
Pre-excavation, post-excavation, and confirmation sample survey	ls	1	$ 4,500	$ 4,500	
Provide Personnel Protective Equipment (PPE)	ls	1	$ 2,000	$ 2,000	
Decontamination area for personnel and equipment	1s	1	$ 1,500	$ 1,500	
					$ 28,000
Activated Sodium Persulfate application in 2-inch diameter DPT borings					
Concrete cutting (12" core up to 6" thick)	ea	51	$ 90	$ 4,590	
Contractor (10-foot DPT borings for Sodium Persulfate application)	ea	51	$ 1,425	$ 72,695	
Activated Sodium Persulfate (713 gallons applied at each location)	gal	36,363	$ 1.03	$ 37,563	
					$ 114,848
Implement Land Use Controls					
Prepare Site-Specific Addendum to the Land Use Control Master Reference Report	ls	1	$ 5,000	$ 5,000	
Add Site-Specific Land Use Controls to Trust GIS System	ls	1	$ 500	$ 500	
Annual administrative cost of Interim Land Use Controls	yrs	5	$ 1,000	$ 5,000	
					$ 10,500
Design and Construction Management Services					
Engineering					
Perform general planning activities	ls	1	$20,000	$ 20,000	
Prepare Remedial Design (workplan and figures)	ls	1	$25,000	$ 25,000	
Construction Observation					
Provide resident engineer	wk	2.5	$ 5,000	$ 12,500	
Provide office support	wk	2.5	$ 2,000	$ 5,000	
Perform air monitoring	wk	2.5	$ 1,000	$ 2,500	
Collect soil confirmation samples with 2 inch diameter DPT	ea	6	$ 865	$ 5,190	
Total Petroleum Hydrocarbons as Gasoline	ea	12	$ 80	$ 960	
Total Petroleum Hydrocarbons as Diesel Fuel	ea	12	$ 85	$ 1,020	
Total Petroleum Hydrocarbons as Fuel Oil (EPA 8015M + EPA 3630A, silica gel cleanup)	ea	12	$ 85	$ 1,020	
Polycyclic aromatic hydrocarbons (EPA Method 8270)	ea	12	$ 200	$ 2,400	
Perform independent data validation (Level III plus 10% Level IV)	ea	12	$ 20	$ 240	
Input analytical results into Presidio database	ea	12	$ 15	$ 180	
Prepare Remediation Completion Report	1s	1	$50,000	$ 50,000	
					$ 126,010
Engineering Project Management					
9% of Design and Construction Management Services	1s	9%			$ 11,341
Subtotal Estimated Costs (w/ contractor overhead and profit):					$ 291,000
Legal and Administrative Costs (assumed to be 5 percent of subtotal estimated costs w/ contractor overhead and profit):					$ 15,000
Subtotal Estimated Costs (w/ legal and administrative costs):					$ 306,000
Contingencies (assumed to be 20 percent of subtotal estimated costs w/ legal and administrative costs):					$ 61,000
Total Preliminary Estimated Capital Costs of Remedial Alternative:					**$ 367,000**

Table D-6
Less Accessible Soil Remedial Units - Alternative 3:
Estimated Costs for In Situ Soil Remediation - Sodium Persulfate Injection
Commissary/PX Study Area
Presidio of San Francisco, California

Annual Costs					
	Estimated Costs				
Task Description	**Unit**	**Quantity**	**Unit Cost**	**Subtotal**	**Total[a]**
Project Management/Administration					
Annual administrative cost of Land Use Controls	ls	1	$ 1,000	$ 1,000	
Annualized cost of Five-Year Review (6 occurrences)	ls	1	$ 5,000	$ 5,000	
					$ 6,000
Subtotal Estimated Costs (w/ contractor overhead and profit):					$ 6,000
Legal and Administrative Costs (assumed to be 5 percent of subtotal estimated costs w/ contractor overhead and profit):					$ -
Subtotal Estimated Costs (w/ legal and administrative costs):					$ 6,000
Contingencies (assumed to be 20 percent of subtotal estimated costs w/ legal and administrative costs):					$ 1,000
Total Preliminary Estimated Annual Costs of Remedial Alternative:					**$ 7,000**

Notes and Assumptions
1.Totals may not sum exactly because of rounding.
2. Field effort for bioremediation enhancement application is assumed to be 10.5 days in duration.
3. Total number of activated sodium persulfate application points was calculated using 10-foot linear spacing (5 feet radius of influence). Assumed drilling 51 borings to 10 feet.
4. Assumed using 5% sodium persulfate solution activated with chelated iron.
5. In situ remediation is assumed to be complete in six months after sodium persulfate application.
6. Drilling costs and sodium persulfate application costs quoted from Vironex.
7. Post-remediation confirmation samples will be collected at SI exceedance locations. Samples will be analyzed for contaminants of concern exceeding cleanup levels.
8. Surface area of soil RUs and volume of shallow (3-foot depth) and deep (10-foot depth) cleanup level exceedance areas were estimated from Figures 16 and 17.
9. Derivation of unit rates is presented in Table D-10.

Table D-7
Accessible Soil Remedial Units - Alternative 4:
Estimated Costs for Soil Excavation and Off-Site Disposal with Groundwater Monitoring
Commissary/PX Study Area
Presidio of San Francisco, CA

Capital Costs					
	Estimated Costs				
Task Description	**Unit**	**Quantity**	**Unit Cost**	**Subtotal**	**Total**
General Site Preparation					
Mobilize contractor equipment and supplies to site	ls	1	$ 20,000	$ 20,000	
Erect and maintain perimeter temporary fence	ft	1,000	$ 1.09	$ 1,090	
Remove 5' to 6' trees and save for replanting	ea	20	$ 48	$ 960	
Pre-excavation, post-excavation and confirmation sample survey	acre	20	$ 1,500	$ 30,000	
Decontamination area for personnel and equipment	ls	1	$ 1,500	$ 1,500	
Provide Personnel Protective Equipment (PPE)	ls	1	$ 2,000	$ 2,000	
					$ 55,550
Excavate Waste and Soil					
Break and remove asphalt, stockpile	sf	38,789	$ 1.00	$ 38,789	
Excavate, segregate soil from asphalt and concrete, stockpile (Assume 20% of Vol.)	cy	2,530	$ 8.50	$ 21,507	
Excavate soil no segregation (Assume 80% of Vol.)	cy	10,121	$ 3.50	$ 35,423	
Collect soil profile samples for disposal	ea	28	$ 26	$ 731	
Disposal characterization					
Six metals (EPA Method 6010B)	ea	28	$ 100	$ 2,812	
(EPA 8015M)	ea	28	$ 105	$ 2,952	
Dispose of non-hazardous soil at Class II facility	ton	20,242	$ 35	$ 708,456	
Waste Characterization and Recycling, Concrete	ton	275	$ 20	$ 5,500	
Waste Characterization and Recycling, Asphalt	ton	718	$ 20	$ 14,366	
					$ 830,536
Dewatering Activities					
Trash Pump Rental	mo	1 pump	$ 900	$ 900	
Tank Rental (Assuming 18,100 gallon tank weir tank)	day	45	$ 26	$ 1,170	
Hose Rental (Assuming 20' section excavation to tank and 50' section tank to sewer)	mo	70 feet	$ 250	$ 250	
Collect water disposal samples	ea	60	$ 26	$ 1,560	
Metals (As, Cd, Cr, Cu, Pb, Ni, Zn)	ea	60	$ 150	$ 9,000	
pH	ea	60	$ 10	$ 600	
Cyanide	ea	60	$ 35	$ 2,100	
Phenols	ea	60	$ 150	$ 9,000	
Sulfides	ea	60	$ 25	$ 1,500	
					$ 26,080
Restoration Activities					
Replant selected trees	ea	20	$ 80	$ 1,604	
Restore Asphalt	sf	38,789	$ 2.25	$ 87,276	
Restore paint to parking spaces	stall	30	$ 9.96	$ 299	
Restore paint to bike path	ft	470	$ 0.80	$ 376	
Restore Concrete	cy	135	$ 25	$ 3,375	
Restore Parking Curbs	ft	555	$ 26	$ 14,430	
Restore Landscaping (grass)	acre	0.37	$ 30,000	$ 11,203	
					$ 118,563
Abandon Existing Groundwater Monitoring Wells (deferred)					
Abandon 2-inch PVC monitoring wells	ea	12	$ 3,300	$ 39,600	
Dispose of well abandonment residuals	ea	12	$ 200	$ 2,400	
Subtotal				$ 42,000	
Discount subtotal at 3.5% annually for 7 years				$ (9,270)	
					$ 32,730

Table D-7
Accessible Soil Remedial Units - Alternative 4:
Estimated Costs for Soil Excavation and Off-Site Disposal with Groundwater Monitoring
Commissary/PX Study Area
Presidio of San Francisco, CA

Capital Costs					
	Estimated Costs				
Task Description	**Unit**	**Quantity**	**Unit Cost**	**Subtotal**	**Total**
Design and Construction Management Services					
Engineering					
Perform general planning activities	ls	1	$ 20,000	$ 20,000	
Prepare remedial design (plans and specifications)	ls	1	$ 75,000	$ 75,000	
Bid, award, and negotiate construction contract	ls	1	$ 11,500	$ 11,500	
Construction observation					
Provide resident engineer	wk	7	$ 5,000	$ 35,000	
Provide office support	wk	7	$ 2,000	$ 14,000	
Provide vehicles and equipment	wk	7	$ 1,300	$ 9,100	
Perform air monitoring	wk	7	$ 1,000	$ 7,000	
Collect soil confirmation samples	ea	95	$ 26	$ 2,470	
BTEX by EPA Method 8260B	ea	5	$ 100	$ 500	
PAHs by EPA Method 8081/8082	ea	95	$ 200	$ 19,000	
Total Petroleum Hydrocarbons as Diesel Fuel, Fuel Oil, Gasoline (EPA 8015M + EPA 3630A, silica gel cleanup)	ea	95	$ 135	$ 12,825	
Perform independent data validation	ea	95	$ 20	$ 1,900	
Input analytical results into Presidio database	ea	95	$ 15	$ 1,425	
Prepare Remediation Completion Report	ls	1	$ 50,000	$ 50,000	
					$ 259,720
Engineering Project Management					
9% of Design and Excavation Management Services	ls	9%			$ 23,375
Subtotal Estimated Costs (w/ contractor overhead and profit):					$ 1,347,000
Legal and Administrative Costs (assumed to be 5 percent of subtotal estimated costs w/ contractor overhead and profit):					$ 67,000
Subtotal Estimated Costs (w/ legal and administrative costs):					$ 1,410,000
Contingencies (assumed to be 20 percent of subtotal estimated costs w/ legal and administrative costs):					$ 282,000
Total Preliminary Estimated Capital Costs of Remedial Alternative:					**$ 1,692,000**

Annual Costs					
	Estimated Costs				
Task Description	**Unit**	**Quantity**	**Unit Cost**	**Subtotal**	**Total[a]**
Conduct Groundwater Monitoring - quarterly for 5 years					
Sample wells (obtain 6 well, 2 seep, and 1 duplicate samples)	ea	36	$ 800	$ 28,800	
Dispose of groundwater sampling residuals	events	4	$ 800	$ 3,200	
Analyze groundwater samples from wells					
General Water Quality	ea	36	$ 230	$ 8,280	
2 Metals - Arsenic and Dissolved Iron (EPA Method 6010)	ea	36	$ 35	$ 1,260	
Total Petroleum Hydrocarbons as Gasoline, as Diesel Fuel, and as Motor Oil (EPA 8015M + EPA 3630A, silica gel cleanup)	ea	36	$ 135	$ 4,860	
Perform independent data validation	ea	36	$ 20	$ 720	
Input analytical results into Presidio database	ea	36	$ 15	$ 540	
Prepare semi-annual monitoring reports	ea	4	$ 5,000	$ 20,000	
					$ 67,660
Subtotal Estimated Costs (w/ contractor overhead and profit):					$ 68,000
Legal and Administrative Costs (assumed to be 5 percent of subtotal estimated costs w/ contractor overhead and profit):					$ 3,000
Subtotal Estimated Costs (w/ legal and administrative costs):					$ 71,000
Contingencies (assumed to be 20 percent of subtotal estimated costs w/ legal and administrative costs):					$ 14,000
Total Preliminary Estimated Annual Costs of Remedial Alternative:					**$ 85,000**

Table D-7

Accessible Soil Remedial Units - Alternative 4:

Estimated Costs for Soil Excavation and Off-Site Disposal with Groundwater Monitoring

Commissary/PX Study Area

Presidio of San Francisco, CA

Notes and Assumptions

1. Totals may not sum exactly because of rounding.
2. Field effort of excavation and well abandonment is estimated to be 7 weeks in duration.
3. Sidewall confirmation samples will be collected at an approximate frequency of 1 sample per every 50 linear feet for a total of 95 samples. Samples will be analyzed for TPHd, TPHfo, TPHg, (EPA 8015M) and PAHs (EPA 8270). All samples for TPH analysis will be prepared with a silica gel cleanup (SGCU). Samples at FDS Pipeline Residual Area 1 will also be analyzed for BTEX (EPA 8260B).
4. Bottom confirmation samples will be collected at a frequency of 1 sample per 2,500 sf for a total of 25 samples. Samples will be analyzed for the same parameters as sidewall samples.
5. Waste characterization samples will be collected approximately 1 per 500 cy. Samples will be analyzed for 6 Metals (Cd, Cr, Cu, Pb, Ni and Zn) (EPA 6010B), and total extractable petroleum hydrocarbons (EPA 8015M).
6. Volumes of soil from Figures 16 and 17. Volumes are presented in Table D-11 and D-12.
7. Conversion factor from cy of soil to tons was 1.6
8. Conversion factor from cy of asphalt to tons was 1.7
9. Conversion factor from cy of concrete to tons was 1.9.
10. Total volume of concrete and asphalt was increased by 10 percent to account for additional demolition during field effort.
11. Estimated water volume for dewatering included 10 foot excavations only. Assuming saturated zone will be from 5 to 10 feet. Estimated water volume is 1,075,953 gallons.
12. Water disposal samples will be collected at one per 18,100-gallon weir tank. Approximately 60 water disposal samples will be analyzed for Ag, As, Cd, Cr, Cu, Pb, Ni, Zn (EPA Method 6010B) and Hg (EPA 7196), pH, Cyanide (EPA 9010B, 9012A), Phenols (EPA 625), and Sulfides (EPA 376). Analyses are based on the Trust's Sanitary Sewer Discharge Permit.
13. Groundwater and surface water monitoring will include 6 monitoring wells and 2 seeps quarterly for 5 years.
14. Derivation of the unit rates is presented in Table D-10.

Table D-8
Less Accessible Soil Remedial Units - Alternative 4:
Estimated Costs for Excavation and Off-Site Disposal With Building 610
Commissary/PX Study Area
Presidio of San Francisco, California

Capital Costs					
	Estimated Costs				
Task Description	**Unit**	**Quantity**	**Unit Cost**	**Subtotal**	**Total**
General Site Preparation					
Mobilize contractor equipment and supplies to site	ls	1	$ 20,000	$ 20,000	
Decontamination area for personnel and equipment	ls	1	$ 1,500	$ 1,500	
Pre-excavation, post-excavation and confirmation sample survey	1s	1	$ 4,500	$ 4,500	
Provide Personnel Protective Equipment (PPE)	ls	1	$ 2,000	$ 2,000	
Remove 11" thick concrete flooring	ft^3	5,218	$ 28	$ 145,667	
					$173,667
Excavate Waste and Soil					
Interior excavation with Bobcat	cy	1,373	$ 91.00	$ 124,943	
Segregate debris from soil and stockpile on site	cy	1,373	$ 5.00	$ 6,865	
Collect soil profile samples for disposal	ea	3	$ 26	$ 78	
Six metals (EPA Method 6010B)	ea	3	$ 100	$ 300	
Total Extractable Petroleum Hydrocarbons	ea	3	$ 85	$ 255	
Dispose of non-hazardous soil at a Class II facility	ton	2,200	$ 35	$ 77,000	
Waste characterization and Recycling, Concrete	ton	400	$ 20	$ 8,000	
					$ 217,441
Dewater Excavation					
"Rain for Rent" tank rental (18,000-gal.)	day	15	$ 26	$ 390	
Trash pump, self-primed	mo	0.5	$ 900	$ 450	
Suction hose (20-foot section)	mo	0.5	$ 100	$ 50	
Discharge hose (50-foot lay flat)	mo	0.5	$ 114	$ 57	
Collect water disposal samples					
Metals (As, Cd, Cr, Cu, Pb, Ni, Zn)	ea	8	$ 150	$ 1,200	
pH	ea	8	$ 10	$ 80	
Cyanide	ea	8	$ 35	$ 280	
Phenols	ea	8	$ 150	$ 1,200	
Sulfides	ea	8	$ 25	$ 200	
					$ 3,907
Replace Concrete Floor					
Pump 11" elevated slab with finish and medium service hardener	cy	193	$ 50	$ 9,700	
					$ 9,700
Implement Land Use Controls					
Prepare Site-Specific Addendum to the Land Use Control Master Reference Report	ls	1	$ 5,000	$ 5,000	
Add Site-Specific Land Use Controls to Trust GIS System	ls	1	$ 500	$ 500	
Annual administrative cost of Interim Land Use Controls	yrs	5	$ 1,000	$ 5,000	
					$ 10,500
Design and Construction Management					
Engineering					
Perform general planning activities	ls	1	$ 20,000	$ 20,000	
Prepare remedial design (workplan and figures)	ls	1	$ 25,000	$ 25,000	
Bid, award, and negotiate construction contract	ls	1	$ 11,500	$ 11,500	
Construction observation					
Provide resident engineer	wk	3	$ 5,000	$ 15,000	
Provide office support	wk	3	$ 2,000	$ 6,000	
Provide vehicles and equipment	wk	3	$ 1,300	$ 3,900	
Collect soil confirmation samples	ea	11	$ 26	$ 286	
Polycyclic aromatic hydrocarbons (EPA Method 8270)	ea	11	$ 200	$ 2,200	
Total Petroleum Hydrocarbons as Gasoline, Diesel Fuel and Fuel Oil (EPA 8015M + EPA 3630A, silica gel cleanup)	ea	11	$ 135	$ 1,485	
Perform independent data validation (Level III plus 10% Level IV)	ls	11	$ 20	$ 220	
Input analytical results into Presidio database	ls	11	$ 15	$ 165	
Prepare Remediation Completion Report	ls	1	$ 50,000	$ 50,000	
					$ 135,756

Table D-8
Less Accessible Soil Remedial Units - Alternative 4:
Estimated Costs for Excavation and Off-Site Disposal With Building 610
Commissary/PX Study Area
Presidio of San Francisco, California

Capital Costs					
	Estimated Costs				
Task Description	**Unit**	**Quantity**	**Unit Cost**	**Subtotal**	**Total**
Engineering Project Management					
9% of Excavation Management and Observation Services	ls	9%			$ 12,218
Subtotal Estimated Costs (w/ contractor overhead and profit):					$563,000
Legal and Administrative Costs (assumed to be 5 percent of subtotal estimated costs w/ contractor overhead and profit):					$ 28,000
Subtotal Estimated Costs (w/ legal and administrative costs):					$ 590,000
Contingencies (assumed to be 20 percent of subtotal estimated costs w/ legal and administrative costs):					$ 118,000
Total Preliminary Estimated Capital Costs of Remedial Alternative:					**$ 708,000**

Notes and Assumptions
1. Totals may not sum exactly because of rounding
2. Field effort for interior excavations is assumed to be two weeks in duration. Field effort includes mobilizing, concrete floor removal, excavation,
3. Sidewall confirmation samples will be collected at a frequency of 1 sample per every 50 linear feet for a total of 9 samples. Samples will be
4. Bottom confirmation samples will be collected at a frequency of 1 sample per 2,500 sf, with a minimum of one sample per excavation, for a total of 3 samples. Samples will be analyzed for TPHd, TPHfo, TPHg (EPA Method 8015M) and PAHs (EPA 8270 SIM).
5. Waste characterization samples will be collected approximately 1 per 500 cy for a total of 3 samples. Samples will be analyzed for 6 Metals (Cd, Cr, Cu, Pb, Ni and Zn) (EPA 6010B), and total extractable petroleum hydrocarbons (EPA 8015M).
6. Volumes of soil from Figures 16 and 17. Volumes are presented in Table D-11 and D-12.
7. Assumed concrete slab is 11-inches thick, and approximately 5700 sf will require removal and replacement.
8. Estimated water volume for one time dewatering included 10 feet excavations only. Assuming saturated zone will be from 5 to 10 feet.
9. Water disposal samples will be collected at one per 18,100-gallon weir tank. Approximately eight water disposal samples will be analyzed for Ag, As, Cd, Cr, Cu, Pb, Ni, Zn (EPA Method 6010B) and Hg (EPA 7196), pH, Cyanide (EPA 9010B, 9012A), Phenols (EPA 625), and Sulfides (EPA 376). Analyses are based on the Trust’s Sanitary Sewer Discharge Permit.
10. Costs for dewatering equipment and tanks from vendor (Rain for Rent).
11. Conversion factor from cy of soil to tons was 1.6.
12. Conversion factor from cy of concrete to tons was 1.9.
13. Derivation of unit rates is presented in Table D-10.

Table D-9
Less Accessible Soil Remedial Units - Alternative 4:
Estimated Costs for Soil Excavation and Off-Site Disposal Following Demolition of Building 610
Commissary/PX Study Area
Presidio of San Francisco, CA

Capital Costs					
	Estimated Costs				
Task Description	**Unit**	**Quantity**	**Unit Cost**	**Subtotal**	**Total**
General Site Preparation					
Mobilize contractor equipment and supplies to site	ls	1	$ 20,000	$ 20,000	
Erect and maintain perimeter temporary fence	ft	1,000	$ 1.09	$ 1,090	
Remove 5' to 6' trees and save for replanting	ea	20	$ 48	$ 960	
Pre-excavation, post-excavation and confirmation sample survey	acre	20	$ 1,500	$ 30,000	
Decontamination area for personnel and equipment	ls	1	$ 1,500	$ 1,500	
Provide Personnel Protective Equipment (PPE)	ls	1	$ 2,000	$ 2,000	
					$ 55,550
Excavate Waste and Soil					
Excavate, segregate soil from asphalt and concrete, stockpile (Assume 20% of Vol.)	cy	275	$ 8.50	$ 2,334	
Excavate soil no segregation (Assume 80% of Vol.)	cy	1,098	$ 3.50	$ 3,844	
Collect soil profile samples for disposal	ea	3	$ 26	$ 78	
Disposal characterization					
Six metals (EPA Method 6010B)	ea	3	$ 100	$ 300	
(EPA 8015M)	ea	3	$ 105	$ 315	
Dispose of non-hazardous soil at Class II facility	ton	2,200	$ 35	$ 77,000	
Waste Characterization and Recycling, Concrete	ton	400	$ 20	$ 8,000	
					$ 91,872
Dewatering Activities					
Trash Pump Rental	mo	0.5	$ 900	$ 450	
Tank Rental (Assuming 18,100 gallon tank weir tank)	day	45	$ 26	$ 1,170	
Hose Rental (Assuming 20' section excavation to tank and 50' section tank to sewer)	mo	0.5	$ 250	$ 125	
Collect water disposal samples	ea	8	$ 26	$ 208	
Metals (As, Cd, Cr, Cu, Pb, Ni, Zn)	ea	8	$ 150	$ 1,200	
pH	ea	8	$ 10	$ 80	
Cyanide	ea	8	$ 35	$ 280	
Phenols	ea	8	$ 150	$ 1,200	
Sulfides	ea	8	$ 25	$ 200	
					$ 4,913
Restoration Activities					
Restore Landscaping	acre	0.15	$ 30,000	$ 4,500	
					$ 4,500
Implement Land Use Controls					
Prepare Site-Specific Addendum to the Land Use Control Master Reference Report	ls	1	$ 5,000	$ 5,000	
Add Site-Specific Land Use Controls to Trust GIS System	ls	1	$ 500	$ 500	
					$ 5,500

Table D-9
Less Accessible Soil Remedial Units - Alternative 4:
Estimated Costs for Soil Excavation and Off-Site Disposal Following Demolition of Building 610
Commissary/PX Study Area
Presidio of San Francisco, CA

Capital Costs					
	Estimated Costs				
Task Description	**Unit**	**Quantity**	**Unit Cost**	**Subtotal**	**Total**
Design and Construction Management Services					
Engineering					
Perform general planning activities	ls	1	$ 20,000	$ 20,000	
Prepare remedial design (plans and specifications)	ls	1	$ 25,000	$ 25,000	
Bid, award, and negotiate construction contract	ls	1	$ 2,500	$ 2,500	
Construction observation					
Provide resident engineer	wk	1	$ 5,000	$ 5,000	
Provide office support	wk	1	$ 2,000	$ 2,000	
Provide vehicles and equipment	wk	1	$ 1,300	$ 1,300	
Perform air monitoring	wk	1	$ 1,000	$ 1,000	
Collect soil confirmation samples	ea	11	$ 26	$ 286	
PAHs by EPA Method 8081/8082	ea	11	$ 200	$ 2,200	
Total Petroleum Hydrocarbons as Diesel Fuel, Fuel Oil, Gasoline (EPA 8015M + EPA 3630A, silica gel cleanup)	ea	11	$ 135	$ 1,485	
Perform independent data validation	ea	11	$ 20	$ 220	
Input analytical results into Presidio database	ea	11	$ 15	$ 165	
Prepare Remediation Completion Report	ls	1	$ 50,000	$ 50,000	
					$ 111,156
Engineering Project Management					
9% of Design and Excavation Management Services	ls	9%			$ 10,004
Subtotal Estimated Costs (w/ contractor overhead and profit):					$ 283,000
Legal and Administrative Costs (assumed to be 5 percent of subtotal estimated costs w/ contractor overhead and profit):					$ 14,000
Subtotal Estimated Costs (w/ legal and administrative costs):					$ 300,000
Contingencies (assumed to be 20 percent of subtotal estimated costs w/ legal and administrative costs):					$ 60,000
Total Preliminary Estimated Capital Costs of Remedial Alternative:					**$ 360,000**

Annual Costs					
	Estimated Costs				
Task Description	**Unit**	**Quantity**	**Unit Cost**	**Subtotal**	**Total**
Project Management/Administration					
Annual administrative cost of Land Use Controls	ls	1	$ 1,000	$ 1,000	
					$ 1,000
Subtotal Estimated Costs (w/ contractor overhead and profit):					$ 1,000
Legal and Administrative Costs (assumed to be 5 percent of subtotal estimated costs w/ contractor overhead and profit):					$ -
Subtotal Estimated Costs (w/ legal and administrative costs):					$ 1,000
Contingencies (assumed to be 20 percent of subtotal estimated costs w/ legal and administrative costs):					$ -
Total Preliminary Estimated Annual Costs of Remedial Alternative:					**$ 1,000**

Table D-9

Less Accessible Soil Remedial Units - Alternative 4:

Estimated Costs for Soil Excavation and Off-Site Disposal Following Demolition of Building 610

Commissary/PX Study Area

Presidio of San Francisco, CA

<u>Notes and Assumptions</u>

1. Totals may not sum exactly because of rounding.
2. Field effort of excavation and well abandonment is estimated to be 7 weeks in duration.
3. Total volume of soil for accessible areas is estimated to be 10,653 cy.
4. Sidewall confirmation samples will be collected at an approximate frequency of 1 sample per every 50 linear feet for a total of 9 samples. Samples will be analyzed for TPHd, TPHfo, TPHg, (EPA 8015M) and PAHs (EPA 8270).
5. Bottom confirmation samples will be collected at a frequency of 1 sample per 2,500 sf for a total of 2 samples. Samples will be analyzed for TPHd, TPHfo, TPHg (EPA Method 8015M) and PAHs (EPA 8270 SIM).
6. Waste characterization samples will be collected approximately 1 per 500 cy. Samples will be analyzed for 6 Metals (Cd, Cr, Cu, Pb, Ni and Zn) (EPA 6010B), and total extractable petroleum hydrocarbons (EPA 8015M).
7. Volumes of soil from Figures 16 and 17. Volumes are presented in Table D-11 and D-12.
8. Conversion factor from cy of soil to tons was 1.6
9. Conversion factor from cy of asphalt to tons was 1.7
10. Conversion factor from cy of concrete to tons was 1.9.
11. Total volume of concrete and asphalt was increased by 10 percent to account for additional demolition
12. Estimated water volume for dewatering included 10 foot excavations only. Assuming saturated zone will be from 5 to 10 feet. Estimated water volume is 1,075,953 gallons.
13. Water disposal samples will be collected at one per 18,100-gallon weir tank. Approximately 60 water disposal samples will be analyzed for Ag, As, Cd, Cr, Cu, Pb, Ni, Zn (EPA Method 6010B) and Hg (EPA 7196), pH, Cyanide (EPA 9010B, 9012A), Phenols (EPA 625), and Sulfides (EPA 376). Analyses are based on the
14. Derivation of the unit rates is presented in Table D-10.

Table D-10
Derivation of Unit Rates
Commissary/PX Site
Presidio of San Francisco, CA

Task Description	Unit		Unit Cost	Source
CAPITAL COSTS				
General Site Preparation - Alternatives 2 (All RUs) and 4 (All RUs)				
Mobilize contractor equipment and supplies to site	ls	$	20,000	Table E-3, Main Installation Sites FS, EKI, March 2003 (MIFS).
Erect and maintain perimeter temporary fence	ft	$	1.09	National Rent-a-Fence
Remove 5' to 6' trees and save for replanting	ea	$	48	Means Cost Guide (Means)
Remove 11" thick concrete flooring	ft^3	$	28	Means
Pre-excavation, post-excavation and confirmation sample survey	acre	$	1,500	MIFS
Pre-excavation, post-excavation, and confirmation sample survey	ls	$	4,500	MIFS/Towill Surveys (lump sum minimum for smaller jobs)
Provide Personnel Protective Equipment (PPE)	ls	$	2,000	Treadwell & Rollo, Inc. (T&R)
Decontamination area for personnel and equipment	1s	$	1,500	T&R
General Site Preparation - Alternative 3 (Less Accessible RUs)				
Mobilize contractor equipment and supplies to site	ls	$	20,000	MIFS
Pre-excavation, post-excavation, and confirmation sample survey	ls	$	4,500	MIFS/Towill Surveys (lump sum minimum for smaller jobs)
Provide Personnel Protective Equipment (PPE)	ls	$	2,000	T&R
Decontamination area for personnel and equipment	1s	$	1,500	T&R
Excavate Waste and Soil				
Remove 11" thick concrete flooring	ft^3	$	28	Means
Break and remove asphalt, stockpile	sf	$	1.00	Means
Interior excavation with Bobcat	cy	$	91.00	Means; adjusted for small equipment
Excavate, segregate soil from asphalt and concrete, stockpile	cy	$	8.50	MIFS
Segregate debris from soil and stockpile on site	cy	$	5.00	MIFS
Excavate soil no segregation	cy	$	3.50	MIFS
Collect soil profile samples for disposal	ea	$	26	MIFS
Disposal characterization				
Six metals (EPA Method 6010B)	ea	$	100	Curtis & Tompkins Laboratories (C&T)
(EPA 8015M)	ea	$	105	C&T
Dispose of non-hazardous soil at Class II facility	ton	$	35	Presidio Trust (Trust)
Waste Characterization and Recycling, Concrete	ton	$	20	Contractor bid sheet
Waste Characterization and Recycling, Asphalt	ton	$	20	Contractor bid sheet
Dewatering Activities				
Trash Pump Rental	mo	$	900	Rain-for-Rent
Tank Rental (Assuming 18,100 gallon tank weir tank)	day	$	26	Rain-for-Rent
Hose Rental (Assuming 20' section excavation to tank and 50' section tank to sewer)	mo	$	250	Rain-for-Rent

Table D-10
Derivation of Unit Rates
Commissary/PX Site
Presidio of San Francisco, CA

Task Description	Unit		Unit Cost	Source
Collect water disposal samples	ea	$	26	MIFS (used same rate as for soil samples)
Metals (As, Cd, Cr, Cu, Pb, Ni, Zn)	ea	$	150	C&T
pH	ea	$	10	C&T
Cyanide	ea	$	35	C&T
Phenols	ea	$	150	C&T
Sulfides	ea	$	25	C&T
Restoration Activities				
Replace Concrete Floor - Pump 11" elevated slab with finish and medium service hardener	cy	$	50	Means
Replant selected trees	ea	$	80	Means
Restore Asphalt	sf	$	2.25	Means
Restore paint to parking spaces	stall	$	9.96	Means
Restore paint to bike path	ft	$	0.80	Means
Restore Concrete	cy	$	25	Means
Restore Parking Curbs	ft	$	26	Means
Restore Landscaping	acre	$	30,000	T&R (extrapolated from Trust spreadsheet for native veg.)
Abandon Existing Groundwater Monitoring Wells				
Abandon 2-inch PVC monitoring wells	ea	$	3,300	T&R subcontractor
Dispose of well abandonment residuals	ea	$	200	T&R subcontractor
Construct Cap				
Repair/Upgrade Permeable Cover (Asphalt Area)				
Asphalt Sealing	sy	$	1.25	Means
Import and Place Clean Topsoil (12 inches)	cy	$	30	MIFS
Vegetate Imported Cover (grass)	acre	$	30,000	T&R (extrapolated from Trust spreadsheet for native vegetation)
ORC® application in 2-inch diameter DPT borings				
Concrete cutting (12" core up to 6" thick)	ea	$	90	Contractor estimate
Contractor (5-foot DPT boring for ORC® application)	ea	$	500	Contractor estimate
Contractor (10-foot DPT borings for ORC® application)	ea	$	450	Contractor estimate
High pressure grout pump	day	$	200	Contractor estimate
ORC® materials (2.5 lbs/cy applied to 1380 cy)	lb	$	10	Contractor estimate

Table D-10
Derivation of Unit Rates
Commissary/PX Site
Presidio of San Francisco, CA

Task Description	Unit	Unit Cost	Source
Bioventing System Installation			
Install Injection (4)/Venting Wells (3) in 626/628 Areas			
Concrete cutting (12" core up to 6" thick)	ea	$ 90	T&R
Contractor (7 31-ft-long 2-in inclined wells, to 9-ft (4) and 4-ft (3) depths)	ft	$ 75	T&R
Install Injection (1)/Venting Wells (1) in 619 Area			
Concrete cutting (12" core up to 6" thick)	ea	$ 90	T&R
Contractor (2 550-ft long 2-in horizontal wells, to 9-ft (1) and 3-ft (1) depths)	ft	$ 120	T&R
Surface Installation (piping in trenches, manifold, blowers, controls)			
Contractor - Trenching (1-in piping,1-ft deep)	ea	$ 50	T&R
Contractor (skid-mounted blowers, controls, noise shed)	ls	$ 30,000	T&R
Ozone Sparging System Installation			
System start-up (subcontractor + site review)	ls	$ 11,500	Contractor estimate
Concrete cutting (12" core up to 6" thick)	ea	$ 95	Contractor estimate
Contractor (drill with HSA six 15-foot borings for sparge points)	ea	$ 340	Contractor estimate
Ozone sparge remedial system	ls	$ 200,400	Contractor estimate
System O&M (4hr/week)	wk	$ 360	Contractor estimate
Activated Sodium Persulfate application in 2-inch diameter DPT borings			
Concrete cutting (12" core up to 6" thick)	ea	$ 90	Contractor estimate
Contractor (10-foot DPT borings for Sodium Persulfate application)	ea	$ 1,425	Contractor estimate
		$ 1.03	
Activated Sodium Persulfate (713 gallons applied at each location)	gal		Contractor estimate
Implement Land Use Controls			
Prepare Site-Specific Addendum to the Land Use Control Master Reference Report	ls	$ 5,000	MIFS
Add Site-Specific Land Use Controls to Trust GIS System	ls	$ 500	MIFS
Annual administrative cost of Interim Land Use Controls	yrs	$ 1,000	MIFS
Design and Construction Management Services			
Engineering			
Perform general planning activities	ls	$ 20,000	MIFS
Prepare Remedial Design (workplan and figures) - Alts 3, 4 (Less Acc.)	ls	$ 25,000	MIFS
Prepare Remedial Design (plans and specifications) - Alts. 2, 4 (Acc.)	ls	$ 75,000	T&R (increased, due to higher project complexity)
Bid, award, and negotiate construction contract - Alts. 3, 4 (Less Acc.)	ls	$ 11,500	MIFS

Table D-10
Derivation of Unit Rates
Commissary/PX Site
Presidio of San Francisco, CA

Task Description	Unit	Unit Cost	Source
Construction Observation			
Provide resident engineer	wk	$ 5,000	MIFS
Provide office support	wk	$ 2,000	MIFS
Provide vehicles and equipment	wk	$ 1,300	MIFS
Perform air monitoring	wk	$ 1,000	MIFS
Bioventing Monitoring			
Field Monitoring for VOCs	dy	$ 100	T&R
Field monitoring for O2, CO2	dy	$ 500	T&R
Confirmation Soil Sampling			
Collect soil confirmation samples with DPT	ea	$ 865	T&R subcontractor
Collect soil confirmation samples, surface	ea	$ 26	MIFS
Total Petroleum Hydrocarbons as Gasoline (EPA 8015M + EPA 3630A, silica gel cleanup)	ea	$ 80	C&T
Total Petroleum Hydrocarbons as Diesel Fuel (EPA 8015M + EPA 3630A, silica gel cleanup)	ea	$ 85	C&T
Total Petroleum Hydrocarbons as Fuel Oil (EPA 8015M + EPA 3630A, silica gel cleanup)	ea	$ 85	C&T
Polycyclic aromatic hydrocarbons (EPA Method 8270)	ea	$ 200	C&T
Benzne, toluene, ethylbenzene, and xylenes (EPA Method 8260B)	ea	$ 200	C&T
Prepare Remediation Completion Report	1s	$ 50,000	MIFS
Prepare Start Up Report	1s	$ 50,000	MIFS (assume same level of effort as above)
Prepare Well Abandonment Report - Alt. 1	ls	$ 5,000	T&R
ANNUAL COSTS			
Conduct Groundwater Monitoring			
Sample wells (obtain 12 well and 2 seep samples per quarter)	ea	$ 800	T&R subcontractor
Dispose of groundwater sampling residuals	ls	$ 800	T&R
Analyze groundwater samples from wells			
General Water Quality	ea	$ 230	C&T
6 Metals (EPA Method 6010)	ea	$ 100	C&T
Volatile Organic Compounds (EPA Method 8260B)	ea	$ 145	C&T
Polycyclic Aromatic Hydrocarbons (EPA Method 8270)	ea	$ 200	C&T
Total Petroleum Hydrocarbons as Gasoline, as Diesel Fuel, and as Motor Oil (EPA 8015M + EPA 3630A, silica gel cleanup)	ea	$ 135	C&T
Perform independent data validation	ea	$ 20	MIFS
Input analytical results into Presidio database	ea	$ 15	MIFS
Prepare quarterly monitoring reports	ea	$ 5,000	MIFS (assume letter-report)

Table D-10
Derivation of Unit Rates
Commissary/PX Site
Presidio of San Francisco, CA

Task Description	Unit	Unit Cost	Source
Project Management/Administration			
Annual administrative cost of Land Use Controls	ls	$ 1,000	MIFS
Coordinate with NPS for Area A site (TPHg Source Area Only)	ls	$ 1,000	MIFS
Annualized cost of Five-Year Review (6 occurrences)	ls	$ 5,000	MIFS

Table D-11
Soil Area and Volume Estimates
Commissary/PX Study Area
Presidio of San Francisco, California

NAME	DEPTH	AREA ($feet^2$)	% GRASS ($feet^2$)	% ASPHALT ($feet^2$)	% CONCRETE ($feet^2$)	AREA GRASS ($feet^2$)	AREA ASPHALT ($feet^2$)	AREA CONCRETE ($feet^2$)	THICKNESS ASPHALT & CONCRETE (feet)	VOLUME ASPHALT ($feet^3$)	VOLUME CONCRETE ($feet^3$)	VOLUME ASPHALT ($yard^3$)	VOLUME CONCRETE ($yard^3$)	Surface Area Soil ($feet^2$)	Bottom Confirmation Samples	Perimeter Length	Perimeter Confirmation Samples
Bld 613	Shallow M	6295.29	20	60	20	1259.06	3777.17	1259.06	0.5	1889	630	70	23	6295	3	380	8
Bld 613	Shallow Border	141.46				-	-	-									
Bld 613	Deep M	5389.98				-	-	-									
Bld 613	Deep Border	145.65				-	-	-									
Bld 619	Deep L	1573.22				-	-	-									
Bld 626	Shallow M	1568.99												2473	1	200	4
Bld 626	Shallow M	904.03				-	-	904.03									
Bld 626	Shallow L	2106.47				-	-	-									
Bld 626	Deep M	1568.04	50	40	10	784.02	627.22	156.80	0.5	314	78	12	3				
Bld 626	Deep L	1709.86				-	-	-									
Bld 628 #1	Shallow M	1906.05	100			1906.05	-	-						1906	1	270	5
Bld 628 #1	Deep M	319.66				-	-	-									
Bld 628 #1	Deep L	304.42				-	-	-									
Bld 628 #2	Shallow M	856.76				-	-	856.76	0.5		428		16	857	1	140	3
Bld 628 #2	Deep M	307.40				-	-	-									
FDS Pipeline	Shallow M	7011.83		95	5	-	6661.24	350.59	0.5	3331	175	123	6	7012	3	575	12
FDS Pipeline	Deep M	2584.08				-	-	-									
FDS Pipeline Residual #1	Shallow M	1256.63	100			1256.63								1257	1	125	3
FDS Pipeline Residual #2	Shallow M	1256.63		100			1256.63		0.5	628		23		1257	1	125	3
AST 634/FDS Pipeline Residual #3	Shallow M	7853.98	80	20		6283.18	1570.80		0.5	785		29		7854	3	314	6
LTTD	Shallow M	2274.96		100		-	2274.96	-	0.5	1137		42		2275	1	290	6
LTTD	Deep M	683.69				-	-	-									
Pipeline A #1	Shallow M	1666.17	100			1666.17	-	-						1666	1	225	5
Pipeline A #1	Deep M	842.76				-	-	-									
Pipeline A #2	Shallow M	279.53	100			279.53	-	-						2443	1	360	7
Pipeline A #2	Shallow M	2163.14	90	10		1946.83	216.31	-	0.5	108		4					
Pipeline A #2	Shallow Border	65.57				-	-	-									
Pipeline A #2	Deep M	919.39	100			919.39	-	-									
Pipeline C	Shallow M	1252.53		100		-	1252.53	-	0.5	626		23		1253	1	195	4
Pipeline C	Deep M	319.66				-	-	-									
Site 15	Shallow M	11678.76		75	25	-	8759.07	2919.69	0.5	4380	1460	162	54	11679	5	540	11
Site 15	Deep M	888.75				-	-	-									
Site 15	Deep M	2040.69				-	-	-									
TPHg Source	Shallow M	11083.33		80	20	-	8866.66	2216.67	0.5	4433	1108	164	41	11083	4	460	9
TPHg Source	Deep M	5572.52				-	-	-									
TOTALS	**-**		**-**	**-**	**-**	**16300.86**	**35262.59**	**8663.60**		**17631.30**	**3879.78**	**653.01**	**143.70**	**59309**	**25.57**	**4199**	**83.98**

L - Less Accessible
M - More Accessible
Border - Area borders Less and More Accessible soil RU and is not included in volume or surface area calculations.

Table D-12
Soil Volume Estimates by Depth
Commissary/PX Study Area
Presidio of San Francisco, California

NAME	DEPTH	THICKNESS (feet)	AREA (ft^2)	VOLUME (ft^3)	VOLUME (cy)	VOLUME by DEPTH (cy)
Bld 628 #2	Shallow M	3	856.76	2570.28	95.20	
Bld 628 #1	Shallow M	3	1906.05	5718.15	211.78	
Pipeline A #1	Shallow M	3	1666.17	4998.51	185.13	
Pipeline C	Shallow M	3	1252.53	3757.59	139.17	
Site 15	Shallow M	3	11678.76	35036.28	1297.64	
FDS Pipeline	Shallow M	3	7011.83	21035.49	779.09	
TPHg Source	Shallow M	3	7683.33	23049.99	853.70	
Pipeline A #2	Shallow M	3	279.53	838.59	31.06	
LTTD	Shallow M	3	2274.96	6824.88	252.77	**6,212**
Bld 626	Shallow M	3	1568.99	4706.97	174.33	
Bld 626	Shallow M	3	904.03	2712.09	100.45	
Bld 613	Shallow M	3	6295.29	18885.87	699.48	
Pipeline A #2	Shallow M	3	2163.14	6489.42	240.35	
FDS Pipeline Residual #1	Shallow M	3	1256.63	3769.89	139.63	
FDS Pipeline Residual #2	Shallow M	3	1256.63	3769.89	139.63	
AST 634/FDS Pipeline Residual #3	Shalllow M	3	7853.98	23561.94	872.66	
Bld 626	Shallow L	3	2106.47	6319.41	234	**234**
Site 15	Deep M	7	888.75	6221.25	230.42	
Site 15	Deep M	7	2040.69	14284.83	529.07	
TPHg Source	Deep M	7	8972.52	62807.64	2326.21	
FDS Pipeline	Deep M	7	2584.08	18088.56	669.95	
Pipeline C	Deep M	7	319.66	2237.62	82.87	
Bld 628 #2	Deep M	7	307.40	2151.80	79.70	
Pipeline A #1	Deep M	7	842.76	5899.32	218.49	**6,439**
Pipeline A #2	Deep M	7	919.39	6435.73	238.36	
LTTD	Deep M	7	683.69	4785.83	177.25	
Bld 628 #1	Deep M	7	319.66	2237.62	82.87	
Bld 626	Deep M	7	1568.04	10976.28	406.53	
Bld 613	Deep M	7	5389.98	37729.86	1397.40	
Bld 619	Deep L	10	1573.22	15732.20	582.67	
Bld 628 #1	Deep L	10	304.42	3044.20	112.75	**1,139**
Bld 626	Deep L	7	1709.86	11969.02	443.30	
Bld 613	Deep Border	7	145.65	1019.55	38	**61**
Bld 613	Shallow Border	3	141.46	424.38	16	
Pipeline A #2	Shallow Border	3	65.57	196.71	7	
					TOTAL	**14,024**
					Total Volume (M)	**12,651**
					Total Volume (L)	**1,373**
					Total Shallow (M)	**6,212**
					Total Deep (M)	**6,439**
					Total Shallow (L)	**234**
					Total Deep (L)	**1,139**

Notes:
L - Less Accessible
M - More Accessible
Border - Area borders Accessible soil RU and is not included in volume or surface area calculations.
Shallow Border - Edge of soil unit beneath building slab (considered Accessible Soil Unit on figures; not used in total volume or area calculations)